TECHNIQUES and PROCEDURES FOR

ADVANCED FIELD ARTILLERY TACTICAL DATA SYSTEM (AFATDS)

(UNEDITED DRAFT)

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CHAPTER ONE

AFATDS EMPLOYMENT

1. **General**. The Marine Corps Fire Support System (MCFSS) is employed at fire and air control agencies, specifically the fire direction centers (FDCs) and fire support coordination centers (FSCCs) from battalion through the Marine Expeditionary Force (MEF) Force Fires Coordination Center (FFCC), at the Direct Air Support Center (DASC), the Tactical Air Control Center (TACC), the Supporting Arms Coordination Center (SACC), and the Rear Area Operations Center (RAOC) of the Combat Service Support Element (CSSE) Command Element. The system allowed these agencies to operate with first generation digital input/output devices which have entered the inventory.1 Advanced Field Artillery Tactical Data System (AFATDS) allows these stations to transition to a single software system that will eventually replace not only the Initial Fire Support Automated System (IFSAS) but also the Battery Computer System (BCS) and Multiple Launched Rocket System (MLRS) Fire Direction System (FDS) and the Fire Direction Data Manager (FDDM) for ARMY Tactical Missle System (ATACMS).

1. **AFATDS development**

A. **Background**. AFATDS is one of five systems that compose the Army Tactical Command and Control System (ATCCS). The other five systems control air defense, intelligence, combat service support and maneuver. AFATDS, the only jointly developed system, provides fire support planning and execution software.

B. **Incremental development.** AFATDS software is to be developed and delivered in three software versions. The USMC testbed is currently using version two (A97), with version three (A99) projected in FY 2000. In addition package 11 software for TACFIRE type devices is projected to be fielded concurently with A98 software making all MCFSS devices JVMF protocol and comatable with AFATDS. The fielding of version 3 all IFSAS/TACFIRE devices will be replaced by AFATDS. At this point all artillery technical fire direction for cannon, missle and rocket systems will be computed by AFATDS.

1. **Software Premise.** AFATDS software is a fire support tool. The computer is provided with detailed guidances derived from the staff planning process and the decide-detect-deliver-assess targeting methodology. This guidance provides the computer with the "rules" that it uses during the processing of fire support missions. It is important to realize that the computer possesses no intelligence and only implements the guidance provided. The computer does not make decisions. Instead it allows the commander and staff to determine the appropriate responses during the period of staff planning. Then these decisions arrived at in planning are executed very raplidly by the computer during the hectic periods of intense activity that characterize modern maneuver warfighting. Failure to provide adequate pre-planned guidance causes the system to fail.

1MarCorSysCom, "Concept of Employment (COE) Marine Corps Fire Support System (MCFSS)" dtd 17 Aug 92

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CHAPTER TWO

FIRE SUPPORT COMMUNICATIONS

1. GENERAL. The ability of fire support coordination and fire direction centers to perform their missions depends on reliable communications. Fire support and artillery communication nets provide voice and data communications over FM, HF, wire, and multi-channel equipment. Voice and data transmissions are not compatible on the same net unless the voice operators are well versed in this procedure. Limit voice communications on a data net to initially establishing and re-establishing communications, and to degraded operations. The fire support communication net structure optimizes the capabilities of available digital data devices while maintaining a voice capability. The depicted communication architecture is therefore different from the existing voice-only communications architecture. The function and names of some nets differs significantly from existing doctrine.

1. DATA COMMUNICATION NETS

A. **MEF Force Fires Coordination (MFFC) Net**

(1) **Purpose.** The MFFC net provides a means for overall coordination with all major command elements of the MEF.

(2) **Composition**.

MEF Force Fires Coordination Center (Net control)
Division FSCC(s)
Rear Area Operations Center (RAOC)
Adjacent units

B. **Division Fire Support Coordination (DFSC) Net**

(1) **Purpose.** The DFSC net provides a division level data net for fire support coordination and planning. The net provides a means to exercise command and control data and for the dissemination of tactical information and reports for all agencies of the division FSCC, including air and naval surface fire support. Data communications between the division FSCC and the battalion FSCCs is available via indirect (relay at IFSAS) at the regimental FSCC if required.

(2) **Composition**.

Division FSCC (Net control)
Artillery Regiment
Regimental FSCCs
Direct Air Support Center (DASC)
Target Processing Center (TPC) by indirect communications through Regimental FDC.

C. **Artillery Regiment Fire Direction (RFD) Net**

(1) **Purpose.** The RFD net is the tactical fire direction data net used by the artillery regiment to transmit orders, fire missions, tactical information, fire planning and meteorological data to its battalions. The battalions use this net to request additional artillery support from the artillery regiment as well as reinforcing battalions when a separate battalion FD net is not established and to provide reports in data formats. The net also provides the principal link between the artillery regiment and its battalions for collecting, exchanging, and disseminating combat information and intelligence.

(2) **Composition.**

Artillery Regiment FDC (Net control)
Artillery Battalion FDCs
TPC via indirect communications through the regimental FDC

D. **Regiment Fire Support Coordination (RFSC) Net**

(1) **Purpose.** The RFSC net is the data fire support and coordination for the infantry regiment. The net provides a means of exchanging tactical information between the regimental and battalion FSCCs and the supporting artillery battalion FDC. Message traffic related to fire planning is sent over this net. Communications between the battalion FDC and the battalion FSCCs can also be accomplished on the COF nets.

(2) **Composition**.

Regimental FSCC (Net control)
DS Artillery Battalion
Battalion FSCCs

E. **Artillery Battalion Conduct Of Fire 1, 2, 3 and 4 (COF 1/2/3/4)**

(1) **Purpose.** The Battalion COF 1/2/3/4 nets are the primary means for artillery forward observers to request and adjust artillery fire and to provide tactical information to higher headquarters. The data COF nets serve as a combination voice COF and FD nets' functions. One COF net is normally provided to each supported maneuver battalion. COFs 1 and 2 may be combined to create COF A and COFs 3 and 4 may be combined to create COF B as dictated by the availability of communications equipment and the situation. Artillery FOs, a firing battery, the Battalion FSCC and the Battalion FDC are assigned to each net. The COF nets must be uncluttered and responsive. The Artillery Battalion must control message traffic to prevent a proliferation of data messages that should be sent over other nets or by other means. Because of limitations at the BCS, this net is operated at data rate 1200 BPS.

(2) **Composition**.

Artillery Battalion FDC (Net control)
Battalion FSCCs
DS Firing Batteries
Artillery FOs

F. **Battalion Fire Direction (BN FD) Net**

(1) **Purpose.** The data BN FD net is activated to provide a direct link between the DS battalion and its reinforcing battalion FDC. This is an optional net with the primary method being communication between the DS and R FDCs on the RFD net.

(2) **Composition**.

DS Artillery Battalion FDC (Net control)
R Battalion FDC
Radars in direct support to the artillery battalion MDS in direct support to the artillery regiment

G. **Meteorological Data/Radar Telling (Met/Rdr Tel) Net**

(1) **Purpose.** The Met/Rdr Tel net links the Target Processing Center (TPC), Meteorological Data Systems (MDS), and the Q-36 radars. The TPC is equipped with a computer and functions as a filter for target acquisition and meteorological data entering the system. The TPC performs the targeting functions associated with counterfire planning. Because of the limitations of the MDS and Q-36, this net is operated at data rate 1200 bps.

(2) **Composition**.

TPC (Net control)
Q-36 Radar sections
Met sections
UAV observer equipped with DCT (when controlled by the artillery regiment)

H. **TPC Net**

(1) **Purpose.** The TPC net links the Target Processing Center (TPC) to the collocated regimental FDC. This net provides the TPC with its link to other stations by indirect routing available through the regimental FDC device.

(2) **Composition**.

Regimental FDC (Net control)
Target Processing Center
Division FSCC via indirect communication through regimental FDC.
Regimental FSCCs via indirect communications through division FSCC.
Battalion FSCCs via indirect communications through the regimental FSCCs.
Battalion FDCs via indirect communications (if required)

I. **Data communications guard chart**

Table 2-1 provides the net assignment of subscribers and the communications parameters for the operation of each net.

TABLE 2-1, DATA COMMUNICATIONS GUARD CHART

C=net control X=guard net A=as required I=indirect communication	MFFC NET	DFSC NET	RFD NET	RFSC NET	ARTY BN FD NET	ARTY BN COF-NETS 1,2,3,4	TPC NET	MET/ RDR TEL

PROTOCOL LAN = L VMF = V TACFIRE = T NATO = N								
KEYTIME								
MEDIA 2 WIRE = 1 4 WIRE = 2 RADIO = 3 LAN = 4								
DATA ENCODING FSK = 1 NRZ = 2 CDP = 3								
DATA RATE 600 = 1200 = 2400 = 4800 = 16k = 32k =								
CARRIER DROPOUT TIME								
COMSEC SECURE = Y UNSECURE = N								
ERROR CORRECTION								
CHANNEL								
MFFCC	C						I	
TACC	X							
DIV FSCC	X	C					I	
DASC		X						
RAOC	X						I	
REGT FSCC		X		C			I	
BN FSCC				X		X	I	
REGT FDC		X	C				C	
TPC	I	I	I	I	I		X	C
DS BN FDC			X		AC	C	I	

GS/GSR BN FDC			X		A	C	I	
R BN			X		A		I	
BTRY 1,2,3,4						X	I	
FO						X		
Q-36					A			X
MDS					A			X
UAV FO								A

1. Reducing the number of operating nets.

A. The stations operating the greatest number of data nets are at regimental level and lower, with the battalion FDC operating the most nets. Figure 2-1 displays the battalion FDC operating seven nets (the regimental fire direction net, battalion fire direction net and COF 4 have not been shown for clarity).

B. Figure 2-2 shows the same battalion FDC operating only four nets (again the regimental fire direction net, has not been shown for clarity). Subscribers on COF 1 and 2 are combined to form COF A. Subscribers on COF 3 and 4 are combined to form COF B. The Battalion FD net is eliminated by moving the reinforcing battalion to the regimental FD net.

1. COMMUNICATIONS PARAMETERS.

A. **Requirements.** Communication parameters provide all stations with the necessary data to build and operate the nets. The following requirements must be considered when selecting the parameters.
Refer to the appropriate equipment technical manuals for specific equipment requirements.

B. **AFATDS VMF NETS.**

(1) **General.** VMF protocol nets are the principle nets used to communicate between AFATDS OPFACS. Only AFATDS computers may be assigned to these nets since no other data communications devices are able to operate this protocol.

(2) **DATA ENCODING**. Data encoding is the method the modem uses to convert 1's and 0's to an electronic signal, transmitting the data to the other computer. The preferred method of data encoding for VMF radios nets is Non-Return to Zero (NRZ). This method is more reliable and allows faster data rates. Frequency Shift Keying (FSK) can also be used but supports only 600 or 1200 bps data rates. Wire lines use conditional di-phase (CDP).

(3) **NET ACCESS DELAY.** Net access delay provides the means of prioritizing a stations ability to access the communications net. The process used by the AFATDS computer depends on one of five methods assigned.

(a) **ADAPTIVE METHOD.** The adaptive method uses the stations

assigned station ranking (entered on the VMF INFORMATION WINDOW) and the priority of the message to determine the net wait time prior to access. If the last message transmitted is low priority and no other station possesses a higher priority message, the station with the lowest ranking will access the net. For the next transmission, the number of stations on the net is added to the ranking to determine the stations next net access wait time. This slips the second ranked station to first place and moves the first ranked station to the end of the list allowing each station equal access. If the priority of the net (established by the last transmission) is high, this process is further modified by increasing the access time of each station with a message of lesser priority by multiples of the number of stations on the net. This method is the recommended method of prioritizing an AFATDS net.

(b) **RANDOM METHOD.** The random method causes each station to randomly assign an access of 0 to 7 for each net access period (period between message busy conditions on the net). This method gives each station equal access to the net without regard to message priority. There is also the possibility that stations may "step on" each other's messages if two stations randomly select the same access value.

(c) **HYBRID METHOD.** This method modifies the random method by increasing the access range to 0 to 24. This access range is divided into subsets based on the priority of the next message a station will send. Net access is then randomly assigned based on these subsets.

(d) **PRIORITIZED METHOD.** This method assigns a rigid priority to the net that is only affected by the priority of the highest prioritized message the station is waiting to transmit. In this method the station ranking (entered on the VMF INFORMATION WINDOW) is modified by the priority of the message. As a rule the stations generally access the net in the order of station ranking.

Note: *VMF nets will produce alerts to the OPFACs if the number of stations is not accurately defined when using ADAPTIVE or prioritized access methods. The number of stations entered must accurately reflect the true number of stations on the net and the prescribed station rank. The net control station is responsible for providing this data in the subscriber table.*

(e) **CONSTANT METHOD.** The constant method uses the station's unique NET ACCESS DELAY CONSTANT entered in the VMF INFORMATION WINDOW to cause a station to be assigned this delay time. This method causes stations to access the net based solely on the DELAY CONSTANT without regard to previous net access or message priority. This method is similar to that used in MCFSS devices.

(4) **DATA RATE**. The VMF data rates supported using SINCGARS radios are 1200, 2400, 4800 and 16000 bps. When using wire lines this can be increased to 32000 bps.

(5) **CARRIER DROPOUT TIME**. This entry enables a wait period to allow the radio frequency level to drop after transmission and before the next attempt. The value set must be the same at all stations.

(6) **ERROR CORRECTION.** Error correction methods are provided to accommodate other VMF device types. As long as all devices on the net are AFATDS OPFACs, FEC_TDC is used.

C. **TACFIRE NETS**. TACFIRE nets are required because all FOs, battery

FDCs, radars and meteorological sections are still equipped with devices originally acquired for the Marine Corps Fire Support System (MCFSS).

(1) **NET ACCESS DELAY.** Net sensing and wait times establish the priority of stations for access to the data net. The higher echelons require higher priority (lower delay times) with the net control station possessing the highest. Priority is further defined by the station's importance in the tactical environment. This is called NET ACCESS in IFSAS and DELAY in BCS and FDS.

(a) All devices except IFSAS LCU use one delay setting for all priority messages.

(b) **AFATDS and IFSAS settings.** AFATDS and IFSAS use 4 settings corresponding to first and subsequent transmission attempts for messages of priority 1 through 4 or 5 through 8. This allows the builder of the net to assign a longer delay to lower priority messages and to further delay subsequent (and less likely to succeed) transmissions of the same message.

(c) **Establishing correct settings.** To establish the correct settings, assign the net access for priority 1-4 messages (for all messages in devices other than the IFSAS LCU) based on the stations echelon and tactical mission.

1) Net control has the highest priority.

2) Stations of the same organizational level are ordered with the next higher number.

3) The next lower organization is assigned the next higher number.

4) For example, if battalion FDC is the net control station on a COF net, it is assigned a priority of 1. The battalion FSCC on the net is assigned 2 and the battery FDC, 3.

5) For AFATDS and IFSAS LCUs, increase the value for subsequent transmissions by at least 1. Make the first transmission of priority 5-8 messages equal to or 1 greater than priority 1-4 subsequent transmissions. Increase the value for subsequent transmissions by at least 1.

(2) **DATA RATE**. All data communications devices are capable of transmitting data at specified rates measured in bits per second (BPS). All MCFSS devices are capable of 600 or 1200 BPS rates. The values are proportional, e.g., 1200 BPS is twice as fast as 600 BPS. DMS and LCU are capable of other rates (1200, 2400, 4800, 8000 {DMS only} and 16000 BPS), which are dependent upon the use of SINCGARS radios. The communications planner at the net control station (NCS) must be aware of the capabilities of the different devices and ensure that rates selected are compatible with devices assigned to the nets ie. AFATDS NRZ 16k and IFSAS digital 16k.

(3) **TONE PAIRS.** MCFSS devices transmit the data signals using a form of tone modulation called audio frequency shift keying (AFSK, commonly called FSK) for the 600 and 1200 BPS rates. The tone pairs used are either 1200/2400 Hz or 1300/2100 Hz. The MDS and Firefinder Radar are capable of 1200/2400 Hz only. When using VRC-12 series radios, the 1300/2100 Hz is the better selection for use with KY-57 encryption. However, 1200/2400 Hz provides

better communications with SINCGARS radios.

(4) **KEYTIME.** Keytime is the duration, in seconds, of the signal transmitted by the data device to power the radio to transmission level. Keytime is a requirement of the radio and is lengthened by adding additional communications devices (e.g., AN/GRA-39 remotes). In most computer devices the keytime also sets the duration of the time the device waits for a control message (ACK or NAK) before giving up the attempt as failed. The communication planner must determine the keytime required by the device with the longest keytime on the net and assign that to all devices on the net.

(a) **Starting Keytimes.** Starting keytimes are determined by the equipment. A rough determination rule can be used. For VRC-12 series radios, use 1.4 seconds and 0.7 for a SINCGARS net. Add 0.7 seconds for each additional piece of communications equipment that must be keyed, e.g., attaching an AN/GRA-39 increases the keytime by 0.7.

(b) Assign the highest keytime predicted for any station to all stations on the net.

(5) **HOLD TIME.** The hold time is the amount of time the AFATDS computer will wait for an ACK/NAK message from a TACFIRE device. In all MCFSS devices except the AN/TPQ-36 Firefinder radar the hold time is based on the keytime. This setting applies only to AFATDS and is displayed but cannot be changed by the operator.

D. **Local Area Networks**. AFATDS has the capability of communicating with other AFATDS via the external LAN and in the future will be able to communicate other systems via the external LAN. At the present AFATDS communicates in a limited manner to CTAPS and in the future will transmit and receive certain message sets with JMCIS devices. Unlike previous versions of AFATDS, where the LAN card address was used to identify other stations, AFATDS now uses the hostname and IP address for this purpose. This data is now a required entry when using the LAN protocol and should be managed by the S-6/G-6 for entry in the subscriber table.

(1) Hostname: The assigned name by which the host will be known to the other stations on the LAN. A maximum of 25 alpha-numeric characters.

(2) Internet Protocol (IP) address: The assigned IP address by which the host will be known to the other stations on the LAN. The IP address consists of four fields separated by a decimal. AFATDS external LAN is a class C LAN which designates the first three octets the net address and the last octet the station address. For this reason the first three octets must be the same for all stations on the LAN unless a router is being used. A class C LAN is further defined by the first octet's parameters being between 193 and 224.

E. **Air support.** In addition to normal LAN communications the capability of communicating with the Contingency Theater Automated Planning System (CTAPS) is available in A97. This feature is not fully functional, however, by using the UNIX Sendmail capability, the AFATDS is able to transmit ASRs to the CTAPS. To receive the ATOC at the AFATDS from the CTAPS, the CTAPS must be in the MUL as system type: MCS. An additional communications setup compartment called Air Support has been added to A97, this compartment was necessary due to the fact that TASM is an application running on top of the AFATDS program and communications

involving TASM are not part of the normal communications setup. the Air Support compartment is broken down into two parts, Destinations and Subordinates.

(1) The Destination field is for sending TASM information to higher and can configured to send to either an AFATDS or a CTAPS, by selecting the radio button next to the system type required.

(a) By selecting AFATDS the unit ID field is activated and the MUL is displayed for selection of the desired unit.

(b) By selecting CTAPS the username and hostname fields are activated, which allows the typing of the same for the CTAPS.

(2) The subordinates field is for parsing of the ATO to those units who sent ASRs to you. There are three fields available and the units are selected from the MUL.

1. SINCGARS RADIO SETTINGS AND CABLING. Table 2-2 provides the appropriate radio cabling and data settings for operation of data nets using SINCGARS radios.

Table 2-2, SINCGARS SETTING

RADIO CABLE CONNECTION	**TACFIRE NET**	**VMF NET**
AFATDS RADIO CABLE FROM TCIM	SINCGARS MOUNTING ADAPTER **AUD/DATA** CONNECTOR	SINCGARS RT **AUD/DATA** CONNECTOR
SINCGARS W-4 CABLE	FROM MOUNTING ADAPTER **AUDIO** CONNECTOR TO RT **AUD/DATA** CONNECTOR	N/A
RADIO DATA SETTINGS	**TACFIRE NET**	**VMF NET**
FUNCTION	SC ON	SC ON
MODE	SC or FH	SC or FH
DATA	Match the setting entry for the net in the AFATDS computer	Match the setting entry for the net in the AFATDS computer
*	OFF	OFF
COMSEC	CT	CT
AFATDS COMM NET SETTINGS		
PROTOCOL	TACFIRE	VMF
MEDIA DEVICE	SINCGARS ICOM	SINCGARS ICOM
DATA ENCRYPTION	FSK 1200/2400 or NRZ	NRZ
DATA RATE	1200 BPS (FSK) 4800/16000 (NRZ)	4800 or 16000
KEYTIME	0.7 or higher	0.7 or higher
CLEAR NET ACCESS	N/A	Default

1. DESTINATION UNIT TABLES (SUBSCRIBER TABLES).

A. **Responsible agencies.** A number of variables affect the writing of

the subscriber tables. These include the number of available communications assets (e.g., radios, frequencies and batteries), number and type of devices, task organization and mission. The subscriber tables must be flexible enough to allow changes during the course of operations. The agencies responsible for producing and updating the subscriber tables must be intimately familiar with these requirements. Since no single agency in the MEF is required to communicate with and possess detailed, up to date knowledge of the communications situation on every net, no single station is able to produce the entire subscriber table. Hence, the production and update of the subscriber tables is decentralized. Each net control station is responsible for the subscribers tables for its nets. These subscriber tables will conform to the standardized procedures listed in this paragraph.

B. **Standard addressing.** Net control stations conform to the system of standard addressing listed in the tables below. The addresses available are listed in the left most column. Each net is provided a column in the table with the net name in the heading. Locating the subscriber in the net column and indexing to the left yields the assigned address for any station. Blank entries for a net indicate an unassigned address available to the communications planner. The following special instructions apply to assigning addresses:

(1) **Special characters** (& * + - # ? .) can not be assigned to fixed format devices or to nets on which fixed format devices must communicate.

(2) **Addresses Q through Z** should be reserved for fixed format relay addresses and not assigned. This limitation applies only to nets that provide communications with fixed format devices.

(3) **MOI addresses**. Assigning MOI addresses for IFSAS results in fire mission messages being received in an information only mode. Do not assign different MOI addresses to these devices when establishing net setting. MOI addresses must be established for LCU IFSAS subscribers in the subscribers table. Use the same address as the physical address extracted from the tables below.

C. **Standard addressing on the MEF FFC net, division FSC net and** regimental FSC net. Table 2-3 provides addresses for MEF force fires coordination net and the fire support coordination nets at Division and the infantry regiment.

TABLE 2-3

ADDRESS: TF/VMF	MFFC NET	DFSCC NET	RFSC NET
A/02	MEF FSCC-MAIN		REGT FSCC-MAIN
B/03	1ST DIV FSCC-MAIN		REGT FSCC-FWD
C/04	1ST DIV FSCC-FWD		1ST BN FSCC-MAIN
D/05	2D DIV FSCC-MAIN		1ST BN FSCC-FWD
E/06	2D DIV FSCC-MAIN		2D BN FSCC-MAIN
F/07	2D DIV FSCC-FWD		2D BN FSCC-FWD
G/08	3D DIV FSCC-MAIN		3D BN FSCC-MAIN

TABLE 2-3

ADDRESS: TF/VMF	MFFC NET	DFSCC NET	RFSC NET
H/09	3D DIV-FSCC-FWD		3D BN FSCC-FWD
I/10	MEF FSCC-FWD		ARTY BN FDC-MAIN
J/11	RAOC		ARTY BN FDC-FWD
0/12		DIV FSCC-MAIN	RAOC
1/13		DIV FSCC-FWD	
2/14		DASC-MAIN	
3/15		DASC-FWD	
4/16		1ST INF REGT-MAIN	
5/17		1ST INF REGT-FWD	
6/18		2D INF REGT-MAIN	
7/19		2D INF REGT-FWD	
8/20		3D INF REGT-MAIN	
9/21		3D INF REGT-FWD	
*/22		ARTY REGT FDC-MAIN	
?/23		ARTY REGT FDC-FWD	
+/24		RAOC	

MEF FFC NET: TACFIRE addresses J through Z, 0 through 9 and * ? + . - # & and all VMF addresses greater than 10 are available for assignment.

DIV FSC NET: TACFIRE addresses A through Z and ? + . - # & and all VMF addresses 02 through 10 and addresses greater than 24 are available for assignment.

REGT FSC NET: TACFIRE addresses K through Z, 0 through 9 and * ? + . - # & and all VMF addresses greater than 12 are available for assignment.

D. **Standard addressing on the regimental FD net, TPC net and** RADAR/MET net. Table 2-4 lists the addresses for the regimental fire direction, TPC wire and RADAR/Survey nets. The addresses are laid out in such a fashion as to allow the DFSC net to be combined with the artillery RFD net.

TABLE 2-4

ADDRESS: TF/VMF	RFD NET	TPC TO REGT FDC NET	RADAR/MET NET
A/02	REGT FDC MAIN	REGT FDC MAIN	

B/03	REGT FDC FWD	REGT FDC FWD	
C/04	1ST BN FDC MAIN		
D/05	1ST BN FDC FWD		
E/06	2D BN FDC-MAIN		
F/07	2D BN FDC-FWD		
G/08	3D BN FDC-MAIN		
H/09	3D BN FDC-FWD		
I/10	4TH BN FDC-MAIN		
J/11	4TH BN FDC-FWD		
K/12	5TH BN FDC-MAIN	TPC-MAIN	TPC-MAIN
L/13	5TH BN FDC-FWD	TPC-FWD	TPC-FWD
M/14	MLRS BN-MAIN		CBR#1
N/15	MLRS BN-FWD		CBR#2
O/16			CBR#3
P/17			CBR#4
1/18			MET#1
2/19			MET#2
3/20			MET#3
4/21			MET#4
+ . - # and & are unassigned TACFIRE addresses for all nets. 22 and above are unassigned VMF addresses for all nets.			

E. **Standard addressing on the battalion COF nets.** Table 2-5 contains the addresses used on the COF nets at the artillery battalion. Four COF nets are provided. COF 1 and 2 may be combined to form a single COF A. COF 3 and 4 may be combined to form a single COF B.

TABLE 2-5

ADDRESS	COF NET-1	COF NET-2	COF NET-3	COF NET-4
A	BN FDC-MAIN	BN FDC-MAIN	BN FDC-MAIN	BN FDC-MAIN
B	BN FDC-FWD	BN FDC-FWD	BN FDC-FWD	BN FDC-FWD
C	1ST BN FSCC-MAIN		3D BN FSCC-MAIN	
D	1ST BN-FSCC-FWD		3D BN FSCC-FWD	

E	1ST COMPANY-FO		1ST COMPANY FO	
F	2D COMPANY-FO		2D COMPANY FO	
G	3D COMPANY-FO		3D COMPANY FO	
H	4TH COMPANY-FO		4TH COMPANY FO	
I	1ST BTRY FDC, 1ST BCS		3D BTRY FDC, 1ST BCS	
J	1ST BTRY FDC, 2D BCS		3D BTRY FDC, 2D BCS	
K		2D BN FSCC-MAIN		4TH BN FSCC-MAIN
L		2D BN FSCC-FWD		4TH BN FSCC-FWD
M		1ST COMPANY-FO		1ST COMPANY-FO
N		2D COMPANY-FO		2D COMPANY-FO
O		3D COMPANY-FO		3D COMPANY-FO
P		4TH COMPANY-FO		4TH COMPANY-FO
0		2D BTRY FDC, 1ST BCS		4TH BTRY FDC, 1ST BCS
1		2D BTRY FDC, 2D BCS		4TH BTRY FDC, 2D BCS
TACFIRE addresses Q through Z, 2 through 9 and & * ? + . - # are unassigned				

F. **TACFIRE ALIASES (Logical names).** TACFIRE ALIASES, also called logical names, must be identical in transmitting and receiving variable format devices. These aliases are governed by a series of rules. The procedures provided below ensure that these rules are applied. The procedure listed here must be adhered to since these conventions are used in the USMC standard master unit list (see APPENDIX B).

(1) **Fire Units.** Fire units' names will be translated into the following sub-fields:

[1] section
[2] platoon
[3] battery or company
[4] battalion
[5] regiment or brigade

(2) **FSCCs.** The FSCCs names are similar to the military unit name.

Battalion FSCC MAIN
[1] letter F
[2] letter S
[3] letter C
[4] battalion
[5] regiment or brigade

Battalion FSCC FORWARD
[1] letter F
[2] letter W
[3] letter D
[4] battalion
[5] regiment tag

Regimental FSCC MAIN
[1] letter F
[2] letter S
[3] letter C
[4] Regiment
[5] MR

Regimental FSCC FORWARD
[1] letter F
[2] letter W
[3] letter D
[4] Regiment
[5] MR

Division FSCC MAIN
[1] letter F
[2] letter S
[3] letter C
[4] Division
[5] MD

Division FSCC FORWARD
[1] letter F
[2] letter W
[3] letter D
[4] Division
[5] MD

(3) **MAGTF FSCCs**

MEF FFCC MAIN
[1] letter F
[2] letter F
[3] letter C
[4] MEF numerical designation
[5] MF

MEF FFCC FORWARD
[1] letter F
[2] letter W
[3] letter D
[4] MEF numerical designation
[5] MF

MEF FORWARD FFCC MAIN
[1] letter F
[2] letter F
[3] letter C
[4] MEF numerical designation
[5] FF

MEF FORWARD FSCC FORWARD
[1] letter F
[2] letter W

[3] letter D
[4] MEF numerical designation
[5] FF

MEU FFCC MAIN
[1] letter F
[2] letter F
[3] letter C
[4] MEU numerical designation
[5] MU

MEU FFCC FORWARD
[1] letter F
[2] letter W
[3] letter D
[4] MEU numerical designation
[5] MEU

(4) **FOs.** The FOs names indicate the supported company and FO number.

[1] letter F
[2] letter O
[3] company
[4] FO number2
[5] blank

FOs assigned to separate battalions
[1] letter F
[2] letter O
[3] company
[4] FO number
[5] LAI/TNK/AAV

(5) **FDCs.** The FDCs names are similar to the military unit name.

Battery FDC
[1] blank
[2] blank3
[3] battery
[4] battalion
[5] regiment or brigade

Battalion FDC
[1] F4
[2] D
[3] C
[4] battalion

2The FO number must appear in the fourth sub-field. FO numbers are assigned using the supported regiment number (9 for Ninth Marines) followed by a sequential numbering for the second digit. FO93 is the third FO in the Ninth Marines. If additional numbers are required, they are assigned from numbers of units not organic or operating with the division.

3The number 2 indicates second BCS.

4Letters F/W/D/ in the first three sub-fields and battalion number in the fourth subfield, and the regimental tag in the fifth subfield, indicate the jump FDC.

[5] regiment or brigade

Regimental FDC
[1] F5
[2] D
[3] C
[4] Regiment
[5] MR

(6) **MDS and Radars.**

MDS/MMS
[1] letter M
[2] letter E
[3] letter T
[4] team number
[5] artillery regiment number followed by letter M

Radars
[1] letter C
[2] letter B
[3] letter R
[4] team number
[5] artillery regiment number followed by letter M

(7) **TPCs.**

Main TPC
[1] letter T
[2] letter P
[3] letter C
[4] regiment
[5] MR

Jump TPC
[1] letter F
[2] letter W
[3] letter D
[4] regiment
[5] TPC

(8) **MORTAR PLATOONS.**

Currently mortars using the MBC devices use a MBC for each section, hence the need for a TACFIRE alias (logical name) for each section.

[1] number 8	[1] number 2
[2] number 1	[2] number 1
[3] letter M	[3] letter M
[4] battalion	[4] battalion
[5] regiment	[5] regiment

(9) **NAVAL SURFACE FIRE SUPPORT SHIP.**

[1] mount number - if mounts
[2] bore diameter in inches
[3] ship type - D = destroyer
- C = cruiser

5Letters F/W/D/ in the first three sub-fields, regimental designator in the fourth subfield and MR in the fifth, to indicate the jump FDC.

- F = frigate
[4] caliber/length designator
[5] last three digits of the hull number

G. **SUBSCRIBER DEVICE TYPE.** The device type assigned to a subscriber determines the format of transmitted messages and the routing of messages.

(1) **Message format.** Digital devices are classified as either fixed or variable format.

(a) A variable format message device can reformat a message to suit the needs of the receiving device. A variable format BCS, for example, transmits the observer location to an AFATDS (also a variable format device) as an FM;OBCO message, but the same message is transmitted to a fixed format DCT as a string of characters that the DCT receives as an observer location message.

(b) A fixed format device transmits a string of 38 characters that are interpreted as a limited catalogue of messages.

(c) Identifying an incorrect device type can result in messages transmitted in a form that will be received in error or not received at all.

(2) **Message routing.** Some device types control routing of messages during fire mission processing.

(a) **FO number.** DMD identifies the subscriber as an FO. This causes the IFSAS computer to assign the subscriber value from the fourth subfield of the logical name as the FO originating the mission. AFATDS extracts the FO number from the destination unit's routing window.

(b) FISTDMD causes the computer to expect the fire mission to pass through this agency for approval prior to arriving at the FDC. The computer will expect initial calls for fire to be transmitted from this station but, will attempt to route subsequent FOCMD messages directly to the FO.

H. **Subscriber table format.** All subscriber data is published in a standard format given and explained below. All devices on the net may not require all the data presented, however, for brevity and simplicity a common table is provided.

LINE #	OWN NAME	NET	PROTOCOL	NET ACCESS	ADD	MOI	RANK ADD
1.	FFCC IMEF	MFFC	VMF	ADAPTIVE	02		1/4

LINE #	STATION NAME	DEVICE	ADD	MOI	AGENCY	FO#	ROUTE ADD
2.	FFCC FWD IMEF	10					PD via MFFC net

3. If a destination unit is on the LAN network the hostname and IP address must be designated.

(1) NET DATA.

(a) **LINE #** provides a reference for ease in identifying a line in the table. This begins the net data for the station.

(b) **OWN NAME** is the name of the station as it is entered in the

net settings in TACFIRE (TACFIRE Alias) or is used to identify the UNIT ID in AFATDS.

(c) **NET** indicates the net for which the following data is provided.

(d) **PROTOCOL** indicates the protocol for the net.

(e) **NET ACCESS** provides net priority values used to establish the net settings for TACFIRE nets and the net access method for VMF nets.

(f) **ADDRESS** is the character(s) assigned as the station's address.

(g) **MOI ADDRESS** is the TACFIRE message of interest address. (Same as Physical Address)

(h) **RANK** is the station rank of the total number of stations for VMF nets.

(2)**NET SUBSCRIBERS** lists the destination units' data (subscriber data) for the stations you will communicate with.

(a) **LINE #** provides a reference for the lines of subscriber data or destination units. This begins the subscriber portion of the table.

(b) STATION is the name of the destination station as it is entered in the subscriber data.

(c) **DEVICE** is the MCFSS device used at the subscriber.

(d) **PHY ADD** is the character assigned as the subscriber's address.

(e) **MOI ADD** is the same character as the PHY ADD.

(f) **AGENCY** is the type of target acquisition agency that the subscriber represents. If the subscriber is not a target acquisition agency, "OTHER" is used.

(g) **FO NUMBER** is the number assigned to the observer in the EDIT ROUTES window for AFATDS. This entry is essential for routing and message translation to and from IFSAS.

(h) **ROUTE** provides the primary and possibly secondary and tertiary routes for AFATDS. Letters P, S and T indicate primary, secondary and tertiary routes and letters D and I indicate direct and indirect routes.

1. Constructing a communications configuration. Communications configurations are designed by the G-6/S-6 with assistance from the G-3/S-3. Though the data provided in par.. 6H above can be used for the majority of fire support situations the constant need to task organize requires the ability to produce working configurations. Building a communications configuration is approached as a logical sequence of steps.

A. **Determine the required connectivity.** Based on the task organization

and needs of the stations involved, determine what stations must communicate with other stations. At this step it is not crucial to determine the type of route (direct or indirect).

B. **Determine what nets will be required.** This is a function of the number and type of stations involved as well as the device types that the stations use to communicate.

C. **Check the routes** based on device limitations and assign net setting parameters. Each different tactical computer system possesses unique communications entries and, in some cases, limited connectivity due to available protocols. These must be examined to ensure the net settings provided for a net are compatible with the stations that must use the net.

D. **Check fire mission routes.** TACFIRE devices require AFATDS to provide a route to each FU and to each sensor for whom fire missions may be fired. These must be added as indirect (relay) routes if no direct route exists. (see APPENDIX D)

E. **Assign addresses.** Deconflicted addresses must be assigned to all stations on each net. Addresses must be unique on each net but can be "reused" for assignment once on each additional net.

F. **Build TAB J** enclosures to allow for dissemination of the communication configuration.

1. Communications etiquette.

A. **Entering the net.** Stations entering the net will establish voice communications on the appropriate comm coord net using the radio/ communications equipment assigned for the data net. (BN FD voice for FOs, battery FDCs and BN FSCCs entering COFs.) When satisfactory voice communications are established, the net control station directs the station to enter the data net and to send data communications check. The subscriber station changes frequencies from the comm coord net to the data net and transmits communications checks data.

1. Trouble shooting. Communications trouble shooting will be directed by the net control station on the appropriate comm coord (BN FD net for stations on the COF nets.) The following procedures are recommended for the operator when communications fail, prior to net control direction.

STEP	EQUIPMENT	ACTION
CHECK PERIPHERALS.	TCIM.	CHECK SCSI ADDRESS
		MATCH ASSIGNED CHANNELS WITH J PORTS
		CLEAN J PORTS
		GROUND TCIMS
		ENSURE POWER TO TCIM.
		ENSURE SCSI CONNECTION.**
	CABLES.*	CHECK CONNECTION
		CLEAN CONNECTOR
		ENSURE THE PROPER END OF THE CABLE (RADIO/TCIM).

	WIRE LINE ADAPTER.	ENSURE CONNECTION ON PROPER J PORT.
		ENSURE WIRE *** CONNECTION TO PROPER POST.
	RCU.	CHECK CONNECTION.
		CLEAN CONNECTION.
		ENSURE THE RCU's CONNECTED TO PROPER NET.
		ENSURE THE RCU'S SETTINGS.
	RADIO.	CHECK DATA SETTINGS.
		PROPER ANTENNA.
		ANTENNA GROUND.
AFATDS.	NET SETTINGS.	IS THERE A TACFIRE DEVICE ON THE NET? PROTOCOL IS TACFIRE. ONLY AFATDS DEVICES ON THE NET? PROTOCOL IS VMF.
		ENCRYPTED/UNENCRYPTED?
		MEDIA: SINCGARS ICOM-RADIO LOCAL RADIO-AN/GRA-39 2 WIRE 4 WIRE
		DATA ENCODING FSK/NRZ/CDP
		DATA RATE:SAME AS SINCGARS.
		KEYTIME
		NET ACCESS DELAY NET ACCESS DELAY CONSTANT NUMBER OF STATIONS / STATION RANK
		SINCGARS SETTINGS: FH/FHM/SC PLAIN/CYPHER
		CHANNEL BALANCING
		CARRIER DROPOUT TIME.
		ERROR CORRECTION.
		BLOCK MODE
		ENSURE GROUND.
GROUND	GROUNDING SYSTEM.	ENSURE SECURE ATTACHMENT TO ALL COMPONENTS OF SYSTEM.
		ENSURE ALL STAKES UTILIZED.
		ENSURE ROCK SALT AND WATER USAGE.

* VERIFY FUNCTIONALLY PRIOR TO OPERATION.
** DO NOT CONNECT/DISCONNECT WHILE POWER IS APPLIED.
***CHANNELS 1 AND 3 ARE 4 WIRE/VMF ONLY (PROGRAMMABLE)

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CHAPTER THREE

AFATDS SYSTEMS INITIALIZATION

1. **General**. Initialization is the procedure by which the tactical computer data base is constructed. During initialization, data is input that establishes the computer identity, target block assignment, commanders guidance and tactical data that allows the computer to determine fire support solutions.

2. **MASTER UNIT LIST**. The master unit list (MUL) provides each AFATDS computer with a list of all computer stations that are involved in operations. A station must be in the MUL for that station's data to be stored or processed by an AFATDS computer. In addition, all OPFACS with which communications are conducted, must appear in the MUL. The MUL contains a set of data for each unit. The MUL must be stored in the AFATDS computer prior to or during the initialization process.

A. **Responsibility.** The MUL used by the Marine Corps is managed by Marine Corps System Command. This provides a common MUL that supports all Marine operations. Task organizations of forces and changes in equipment status generates the need for local modifications of the MUL to support specific operations. During such periods, the MUL is the responsibility of the senior Marine headquarters. The MUL is disseminated as early as possible prior to the commencement of operations. Dissemination is accomplished by exporting the master unit list to an optical disk and delivery of the disk to subordinate units. Changes to the MUL are directed by the responsible headquarters and disseminated by freetext message. The currently approved MUL is contained in APPENDIX B.

B. **Contents of the MUL.**

(1) **Unit identification**. This data includes the name of each unit (UNIT ID) and an assigned unit number. The unit number and name is unique to that unit. The unit number must be the same at each OPFAC for data exchange to occur. All BCS and FDS units must appear as separate entries even if they are employed at an AFATDS equipped unit. In other words, if a battery FDC is equipped with both AFATDS and the BCS, both are separate IDs in the MUL.

(a) **UNIT ID** is composed of six data fields designed to indicate ascending order of military organizations from section, platoon, company, battalion, regiment and echelons above regiment. This logic, however, does not have to be used as long as all stations use the same master unit list. It should be noted that in many applications the data fields identifying units are not long enough to contain the entire unit ID and only the first dozen letters show. This makes it necessary to contain enough data in the first 10 to 15 characters to identify the unit.

(b) **UNIT NUMBER** ranges from 1 to 8190, and is the identifier for all unit data that is transmitted.

(2) **SYSTEM TYPE.** A third item that must be provided for all stations is the device type or computer type used to communicate. The device type tells the AFATDS computer what messages may be transmitted to the station and

how to format the message. The following rules pertain to the assignment of device types:

(a) IFSAS/LTACFIRE is used for IFSAS equipped stations.

(b) DCT is assigned to FOs using the DMS. USMC DCT AIR and USMC DCT ARTY are intended for use with the Marine Tactical Protocol (MTS) programs for AIR and ARTY. These programs are available at the DMS but should not be used since the MTS protocol used by the DMS does not perform in accordance with the MIL STD agreement.

(c) AIR and NGF actually indicate the absence of a device since no compatible tactical data communication device exists for these stations. This entry allows information to be printed.

(3) **Aliases.** Some computers use specific name arrangements to identify the stations with which they communicate. These names are stored by AFATDS in the MUL and are accessed as required.

(a) **TACFIRE ALIAS** is a required entry in the MUL for all MCFSS devices and is discussed in detail in para. 6F of Chap 2.

1. TACFIRE devices (DMS, BCS, IFSAS, FIREFINDER and MDS/MMS) and for all AFATDS communicating with TACFIRE devices. A series of rules govern the structure of TACFIRE ALIASES. ThSoftware is loaded in the CHS2 system using the CD ROM drive. At this time the software is on two disks, disk 1 contains the

operating system and disk two contains the AFATDS software. Whenever software is to be loaded both disks must be loaded, loading both disks takes approximately 1 hour. Prior to loading ensure the SCSI cable is disconnected.

(b) **ATCCS ALIAS** is used by stations in the Army Command and Control System. This is a required entry when the station's device is the MCS, FAADC2, ASAS or CSSCS.

(c) **NATO ALIAS** allows the computer to communicate with stations using the German ADLER, French ATLAS, and British BATES Fire Support Systems.

(4) **MSE PHONE NUMBER** provides storage and retrieval of a phone number that can be used to dial through Multisubscriber Equipment (MSE) or the Unit Level Circuit Switch (ULCS).

1. **DATA BASE MANAGEMENT.** When AFATDS software is loaded onto the workstation for the first time no data base exists. Because the system must be activated after loading in order to store the master unit list, a blank data base can be activated with a default MUL that contains a single unit name, the "NULL UNIT". A copy of this blank data base should be backed-up to an optical disk. This is required to allow the replacement of existing data base should it be necessary to construct a new data base. Failure to perform this task will cause any new plan that is implemented or a new data base built with any map data to simply augment the existing data base with the potential to

duplicate data, especially target numbers.

A. **PROCESS.** The process by which a new data base is created is described in the following steps:

(1) Load software or restore the blank data base described above. When A97 software needs to be loaded the following steps must be followed.

(a) Whenever the system is powered it is booted by default from the RHDD. To stop this procedure so that software may be loaded from the CD ROM, STOP A is selected as soon as the SHRD displays a screen. In addition to stopping the system from being booted from the RHDD, it causes the ok prompt to be displayed or the EPROM. This prompt allows the changing of the environment.

(b) 2. Before loading software, the operating parameters can be viewed. These parameters need only be entered once as they will remain the same as entered until changed. The only parameters that need to be changed from the defaults are auto-boot?, boot-device and sbus-probe-list these options should be true, disk3 and 123456 respectively. These three options allow the AFATDS to be booted from the RHDD, whose SCSI address is 3, automatically when powered. To view these parameters type printenv and select Enter, this displays the operating parameters.

(c) 3. If these three options need to be changed the command setenv is typed at the ok prompt and then the parameter and the desired option is typed ie. the operating parameters are viewed and auto-boot? is set to false, type setenv and select enter. The ok prompt is displayed with a space then setenv, type auto-boot? space true and select Enter. The auto-boot selection is now set to true. Prior to continuing reset must be typed at the EPROM to save these entries.

(d) 4. Prior to loading software ensure all cables are connected properly and all devices are on. To begin loading software, place the operating system (OS) in the CD ROM drive, and type boot space cdrom at the ok prompt. The system is now being loaded from the CD.

(e) 5. While loading the OS options defining the desired configuration will be displayed for selection. The first option displayed for selection is a summary of the choices that will be displayed. Select Continue.

(f) 6. The next screen describes the following configuration parameters, select Continue.

(g) 7. The first parameter is Host Name: Type samename in the provided field, then select Continue.

(h) 8. The next window reqiures you to determine wether the system will be networked. A networked system shares an operating system with another computer, select NO, Continue.

(i) 9. A confirmation window is displayed with the parameters entered, if entered correctly select continue. If entered erronously select change, make the necessary changes and select Continue.

(j) 10. The next screen allows the specification of a time zone. Select Geographic Region and then select Set.

(k) 11. The next window allows the selection of the desired region and time zone. Select United States, Pacific and Continue.

(l) 12. The Date and Time window is displayed. This allows the entry of system time, type the correct year, month, day, hour and minute then select Continue.

(m) 13. A confirmation window is displayed, if correct select Continue, if not select Change.

(n) 14. The next window describes the upcomming options, select Continue.

(o) 15. The next window is for upgrading the OS software, select Initial.

(p) 16. System type is the next option. Select Standalone, then Continue.

(q) 17. Software is the next option. Select Entire Distribution plus OEM Support to load the entire OS available, then Continue.

(r) 18. Next displayed window is Disks. This option allows the selection of the archive device to which the OS and software will be saved, select c0t3d0 bootdrive 8639 MB (RHDD), select Add and continue. You see that the selected device has now been moved to the right hand box.

(s) 19. Preserve Data is the next option displayed. This option allows files to be saved when the OS and software are loaded. No data will be saved, select Continue.

(t) 20. Automatically Layout File Systems is the next option displayed, this allows partioning of the RHDD for the various files to be loaded. Select Manual Layout.

(u) 21. File System and Disk Layout are the next options, select Customize.

(v) 22. The Customize Disk window is displayed. In subfield 0 type / this designates the root directory, then select the subfield to it's right and type 1000 designating the amount of MBs. In the same manner type swap in subfield 1 and 1000 to it's right, this allows 1000 MBS for the transfer of data between the RAM and RHDD. Lastly type /afatds in subfield 3 and all remaining memory free (6637) to it's right, then select OK.

(w) 23. A verification window is displayed with the entered data, select Continue if correct or Go Back to make a change.

(x) 24. The next window alllows loading of software from a server, we will not be doing this, select Continue.

(y) 25. Profile is displayed, select Begin Installation.

(z) 26. Select Rebooot, this will move the OS from the RAM to the RHDD.

(aa) 27. After the OS is loaded the system will reboot and be ready to load the AFATDS software. Prior to starting the load the opportunity to input a password is available.

(ab) 28. No root password will be used, select Enter twice. If a password is desired type the root password and select Enter.

(ac) 29. The login prompt is displayed, type root and select Enter.

(ad) 30. The prompt becomes a pound sign, release the optical disk drive (ODD), by typing the command eject cd, remove the disk containing the OS and insert the AFATDS software.

(ae) 31. (OPTIONAL) Type df -k this allows the viewing of the directorys and files in the program.

(af) 32. At the prompt type cd cdrom and select Enter. This changes the directory to cdrom.

(ag) 33. At the prompt type cd volume_1 and select Enter. this changes the directory to volume_1.

(ah) 34. At the prompt type ./afatdsloadrc and select Enter. This starts loading of the AFATDS software, the screen displays Installing AFATDS.

(ai) 35. When completely loaded the login window is displayed, login and shutdown.

ADDITIONAL A97U.O.5 PROCEDURES

(aj) 36. After powering completely down, power back up.

(ak) 37. Stop the boot sequence by typing STOP A when the screen displays a window.

(al) 38. Check the operating parameters by the printenv function. It may be necessary to change the sbus-probe-list from 012 to the correct default 0123.
If necessary make the correction by the setenv function and then continue.

(am) 39. At the OK prompt type boot -r.

(an) 40. The AFATDS boots up and the TCIMS will be operational.

(2) 41. Restore a database, replace the default, ensure the correct unit ID and role and activate.
ire Support Systems.

(3) After loading software or restoring the blank data base the system is activated as the NULL UNIT, role FSE/FSCC.

(4) After activation, import the master unit list.

(5) Shutdown the system and re-boot from the hard disk drive.

(6) Activate the system using your logical name.

(7) If, after activation, the unit configuration window displays UNIT ID: UNKNOWN UNIT, then import the master unit list. The system is now ready. Backup the data base.

(8) Prior to the operation and system activation CLOCK SYNCHRONIZATION should be established for all systems as per unit SOP, by the senior Headquarters.

(9) Operational Data Bases should be backed-up at designated intervals as per unit SOP, or after a large amount of data has been input into the system.

2. **UNIT ROLES.** When the AFATDS workstation is booted, before activating, the operator must select a unit role for the OPFAC. The role governs how the software configures to process fire support tasks.

A. **FFCCs and FSCCs** select unit role FSE/FSCC.

B. **DASC and TACC** select unit role FSE/FSCC.

C. **Regimental FDCs and battalion FDCs** select unit role FA CP.

D. **Target processing centers** select unit role FSE/FSCC.

E. **Firing Units** select unit role FU.

1. **MAP DATA.** All AFATDS stations will operate using a map mod data. The map mod provides the datum that will be used as the base datum for that system. The map mod also allows the computer to determine the 100,000 meter square within which short coordinates receive from fixed format TACFIRE devices can be expanded to long coordinates. The highest headquarters dictates the datum as per the dissiminated maps. Subordinate FSCCs dictate their own and their supporting units map mod reference grid based on their focus of operations. Changes to the map setup are made at the discretion of the FSC/S-3/FDO at each station. The MAP MOD is also transmitted to IFSAS Systems using the SPRT;DATUM and SPRT;MAP messages.

In addition it may be necessary to change the mapmod in large scale operations operations. This should be done as per the above paragraph, however, for AFATDS dealing with fixed format TACFIRE devices the mapmod may have to be moved more frequently due to the limitation of fixed format devices transmitting short coordinates only.

A. **INITIAL MAP DATA.** PLAN SOP will be setup using map data of the home station of the unit.

B. **OVERLAYS.** Overlays commonly used by the OPFAC will be established in PLAN SOP.

C. **OPERATIONS.** PLAN SOP is made current and all map data and unit locations contained therein are altered to reflect the actual area of operations. All changes directed by the operations order are implemented and data base management begins.

1. **UNIT DATA**

A. **BASIC UNIT INFORMATION.** AFATDS requires that unit data be stored prior to receiving the first unit update if the unit is not equipped with an AFATDS computer. This requirement is driven by the fact that non-AFATDS stations do not report sufficient data (e.g. command and supported unit IDs) to create a complete unit record. All organic, subordinate, adjacent and higher non-AFATDS units will be constructed in plan SOP.

(1) **UNIT TYPE.** Unit type is selected before the unit data is entered. Unit type of OBSERVER, RADAR, etc. apply to like units. OTHER applies to any unit that is not a sensor or a fire unit. CANNON and ROCKET is applied depending upon unit organization.

(a) If an AFATDS computer controls the BCS or FDS at the fire unit level (i.e., battery FDC possesses an AFATDS workstation and a BCS) then unit data is constructed for both the AFATDS and the BCS. Both unit data represent the same echelon (both are battery or platoon units). The AFATDS unit is assigned UNIT TYPE CANNON or ROCKET and the BCS or FDS unit is OTHER.

(b) If an AFATDS computer controls more than one BCS or FDS (e.g., battalion FDC with an AFATDS workstation controls fire units equipped only with BCS) then unit data is constructed for both the AFATDS and the fire units. The AFATDS unit is assigned UNIT TYPE OTHER and the BCS or FDS unit is CANNON or ROCKET.

(2) **UNIT SYMBOLS.** Unit symbols provide the map graphic that represents the unit. It is important that the symbol properly represent the actual function of the unit to allow fire mission processing to occur. For example, a battalion FDC must be a "CP". If the unit symbol "FDC" or "COC" is used the wrong fire mission message will be transmitted from another OPFAC thus preventing the correct response from occurring. The following table lists legal entries:

TABLE 3-1, UNIT SYMBOLS	
OPFAC ROLE	SYMBOL
FSE/FSCC	FSCC, CP, FSE, FSCC B, ATTACK MAIN, SACC
FA CP	CP, UNIT
FU	FDC,CP, UNIT

(a) **LABELS.** Labels entered under higher/lower fields will be in accordance with FM 101-5-1 and local SOPs.

B. **GENERAL UNIT INFORMATION.**

(1) **COMMAND AND SUPPORTED RELATIONSHIPS.** Command and supported relationships are provided in chapter 4 of this reference.

(2) **CONOPS.** CONOPS set up for each OPFAC is provided in chapter 4 of

this reference.

C. **DETAILED UNIT INFORMATION.** The Detailed Unit Information window is available depending upon Unit Type selected when unit data was built.

(1) **OPERATIONS.** Unit data is the responsibility of each unit. Updates will be made and distributed as they are required. Units with subordinate TACFIRE stations will ensure adequate unit data is maintained. This unit data must be built prior to receiving the first unit update from the TACFIRE station. It is suggested that a database with initial positions, as per tab J, be built in a plan. Upon arriving in the field implement the plan, and stand by for updates.

(2) **RADAR Unit Data.** Radar basic, general and detailed unit data is built for subordinate radars. When the radar location message is transmitted, only the radar location will update.

(3) **OBSERVER Unit Data.** Observer basic, general and detailed unit data is built for subordinate observers at the FSCC to which the observer requests fire mission. When the OBSERVER LOCATION MESSAGE is sent from the DMS, the location, PRF code, cloud height and visibility will update.

TABLE 3-2

DMS VISIBILITY ENTRIES	AFATDS INTERPRETATION

1. 0 (less than 2000m)	Not recognized, original stored entry remains unchanged.
2. 1 (2000-4000m)	2000m
3. 2 (4000-7500m)	4000m
4. 3 (>7500m)	7501m

NOTE: If unit data is not present in the computer that receives updates directly from the radar or observer a medium level alert indicating a translation failure of the TACFIRE observer location will be received. This is caused by the fact that the fixed format devices cannot transmit sufficient data (e.g. unit symbol, command and supported unit IDs, etc.) to allow a unit record to be created.

(4) **IFSAS units** require that basic and general unit information is built at the AFATDS station to which these units report. IFSAS equipped stations can transmit subordinate sensor and fire unit data but cannot transmit a message containing their own unit data. After communications are established, IFSAS units will transmit their unit location by SYS;PTM. This will be received by the AFATDS OPFAC as a freetext message.

(5) **BCS and FDS** equipped fire units require that basic, general and detailed data be built at their higher AFATDS OPFAC.

(6) **Air and Naval Surface Fire Support** basic and detailed data must

be built at the controlling AFATDS OPFAC due to the fact that there are no existing digital devices for these agencies at this time.

1. **GEOMETRY**.

A. **PLAN SOP.** No geometry is stored in plan SOP. All initial geometry is entered in accordance with the operations order and overlay. This geometry is then distributed by transmitting the geometry from the responsible OPFAC using the distribution list.

B. **OPERATIONS.** All geometry directed by the operations order will be added to the current plan. If the geometry is not effective at the start of actual operations (e.g. a zone for a unit not yet ashore or an on-call measure) the geometry is entered as an on-call measure with an effective time of H+0. When the measure is to be placed into use the responsible OPFAC activates the measure and distributes the change via distribution.

CHAPTER FOUR

COMMAND-SUPPORTED RELATIONSHIPS AND CONOPS

1. **COMMAND-SUPPORTED RELATIONSHIPS.** Command-supported relationships provide the AFATDS computer with higher headquarters and subordinates for each unit as well as the support-supported relationships for fire support and maneuver units. This information is critically important for data distribution and

fire mission processing. Table 4-1 provides a guide used to determine the command-supported relationships. The actual relationships at any given time will depend upon the task organization and missions assigned to fire support assets.

TABLE 4-1 COMMAND-SUPPORTED RELATIONSHIPS, ASHORE

STATION	OPFAC	COMMANDED BY:	SUPPORTED UNIT:
Senior FFCC	MAIN	NONE	NONE
	FWD	MAIN Senior FFCC	MAIN Senior FFCC
TACC	MAIN	MAIN Senior FFCC	Main Senior FFCC
GCE FSCC	MAIN	MAIN Senior FFCC	MAIN Senior FFCC
	FWD	MAIN GCE FSCC	MAIN GCE FSCC
DASC	MAIN	TACC	MAIN GCE FSCC
	FWD	DASC MAIN	DASC MAIN
RAOCC	MAIN	Senior FFCC	Senior FFCC
	FWD	RAOCC MAIN	
REGT FSCC	MAIN	MAIN DIV FSCC	MAIN DIV FSCC
	FWD	MAIN REGT FSCC	MAIN REGT FSCC
BN FSCC	MAIN	MAIN REGT FSCC	MAIN REGT FSCC
	FWD	MAIN BN FSCC	MAIN BN FSCC
BN MTR PLT		MAIN BN FSCC	MAIN BN FSCC
FO		MAIN BN FSCC	MAIN BN FSCC
REGT FDC	MAIN	MAIN DIV FSCC	MAIN DIV FSCC
	FWD	MAIN REGT FDC	MAIN REGT FDC
TPC	MAIN	MAIN REGT FDC	MAIN REGT FDC
	FWD	MAIN TPC	MAIN TPC
RADARS		MAIN TPC	MAIN TPC
MET SECTIONS		MAIN TPC	MAIN TPC
DS BN FDC	MAIN	MAIN REGT FDC	SUPPORTED FSCC MAIN
	FWD	MAIN BN FDC	MAIN BN FDC
R BN FDC	MAIN	MAIN REGT FDC	REINFORCED FDC, MAIN
	FWD	MAIN R BN FDC	MAIN R BN FDC
GS BN FDC	MAIN	MAIN REGT FDC	MAIN REGT FDC
	FWD	MAIN GS BN FDC	MAIN GS BN FDC
GSR BN FDC	MAIN	MAIN REGT FDC	MAIN GCE FSCC, ON ORDER REIN FDC MAIN
	FWD	MAIN GSR BN FDC	MAIN GSR BN FDC
BTRY FDC	AFATDS	MAIN BN FDC	MAIN BN FDC
	BCS	BTRY AFATDS	BTRY AFATDS

1. **COMMAND SUPPORTED RELATIONSHIPS DURING LANDING FORCE TRANSITION ASHORE.** Table 4-2 details relationships during transition of control ashore during amphibious operations.

TABLE 4-2 COMMAND-SUPPORTED RELATIONSHIPS, AFLOAT

STATION	OPFAC	COMMANDED BY:	SUPPORTED UNIT:
MAGTF FFCC	MAIN	NONE	NONE
	FWD	MAIN MAGTF FFCC	MAIN MAGTF FFCC
GCE FSCC	MAIN	MAIN MAGTF FFCC	MAIN MAGTF FFCC
	FWD	MAIN GCE FSCC	MAIN GCE FSCC

REGT FSCC	MAIN	MAIN GCE FSCC	MAIN GCE FSCC
	FWD	MAIN GCE FSCC	MAIN GCE FSCC
BN FSCC	MAIN	MAIN REGT FSCC	MAIN REGT FSCC
	FWD	MAIN REGT FSCC	MAIN REGT FSCC
BN MTR PLT	FDC	MAIN BN FSCC	MAIN BN FSCC
MTR FO	FO	MAIN BN FSCC	BN MTR PLT
REGT FDC	MAIN	MAIN GCE FSCC	MAIN GCE FSCC
	FWD	MAIN GCE FSCC	MAIN GCE FSCC
TPC	MAIN	MAIN REGT FDC	MAIN REGT FDC
	FWD	MAIN REGT FDC	MAIN REGT FDC
RADARS		MAIN TPC	MAIN TPC
MET		MAIN TPC	MAIN TPC
DS BN FDC	MAIN	MAIN REGT FSCC	MAIN REGT FSCC
	FWD	MAIN REGT FSCC	MAIN REGT FSCC
BTRY FDC		MAIN DS BN FDC	MAIN DS BN FDC

1. **Command and supported relationships during the initial phases** of amphibious assault are governed by the situation and communications limitations. Table 4-3 recommends a system of relationships based on the assault force commanding assets ashore and the assumption that higher headquarters units will transition ashore beginning with their forward elements.

TABLE 4-3 COMMAND-SUPPORTED RELATIONSHIPS, INITIAL ASSAULT MAGTF FFCC IN SACC, GCE FSCC IN LFOC

STATION	OPFAC	COMMANDED BY:	SUPPORTED UNIT:
SACC	MAIN	None	None
MAGTF FFC	MAIN	SACC	SACC
	FWD	MAIN MAGTF FFCC	MAIN MAGTF FFCC
GCE FSCC	MAIN	MAIN MAGTF FFCC	MAIN MAGTF FSCC
	FWD	MAIN MAGTF FFCC	MAIN MAGTF FSCC
ASSAULT BN FSCC	MAIN	MAIN GCE FSCC	MAIN GCE FSCC Causes fire requests for additional fires to be transmitted to the MAGTF FFCC where all other assets are controlled.
	FWD	MAIN GCE FSCC	MAIN GCE FSCC
BN MTR PLT	FDC	MAIN BN FSCC	MAIN BN FSCC
MTR FO	FO	MAIN BN FSCC	BN MTR PLT
REGT FDC	MAIN	MAIN DIV FSCC	MAIN DIV FSCC
	FWD	MAIN DIV FSCC	MAIN DIV FSCC
TPC	MAIN	MAIN REGT FDC	MAIN REGT FDC
	FWD	MAIN REGT FDC	MAIN REGT FDC
RADARS		MAIN TPC	MAIN TPC
MET		MAIN TPC	MAIN TPC

TABLE 4-3 COMMAND-SUPPORTED RELATIONSHIPS, INITIAL ASSAULT MAGTF FFCC IN SACC, GCE FSCC IN LFOC			
DS BN FDC	MAIN	MAIN ASSAULT FORCE FSCC This causes the BN FDC to be positioned and receive orders from the FSCC ashore.	MAIN MAGTC FFCC Causes requests for reinforcing fires to be transmitted to the MAGTF FFCC where all other fire support assets are available.
	FWD	MAIN REGT FSCC	MAIN REGT FSCC
BTRY FDC		MAIN DS BN FDC	MAIN DS BN FDC

1. **Effects of command-supported relationships.**

A. **Data distribution.** Default data distribution lists are created by the computer based on the command and supported relationships of units. CONOPS backup stations provide the remainder of the default lists. Although default distribution can be used by USMC units. It is recommended that distribution lists be created with the contents of the default lists being merged and then adding those additional units desired.

B. **Fire mission processing.** Command and supported relationships are vital for fire mission processing and fire support planning. An AFATDS OPFAC employs only those assets:

(1) That are commanded by or support that OPFAC, or

(2) That are commanded by or support a supporting artillery CP, or

(3) That are commanded by or support a unit in the systems preference table unit preferences.

1. **VARIATIONS ON COMMAND AND SUPPORTED RELATIONSHIPS.**

A. Although normally not done, the DS artillery commander may opt to assign battery FDCs to support specific committed battalion FSCCs. At the battery FDC, the supported unit ID is that of the battalion FSCC. The command unit ID is still the battalion FDC. This relationship causes the battalion FDC to consider the battery FDC for fire missions prior to sending the fire request higher.

2. **Continuity of Operations (CONOPS).**

A. **General.** CONOPS allow continued, uninterrupted operations when an AFATDS station fails or is destroyed. This is accomplished by establishing planned backup stations designated to take over operations of the failed station.

B. **Terms used in CONOPS.**

(1) **The principal** is the station that loses the ability to control it's subordinates.

(2) **The primary backup** is the station of choice that assumes

operation for the principal.

(3) **The secondary backup** is a redundant backup that is used if the primary backup is not capable.

(4) **The satellite stations** are those higher, subordinate, supporting and supported OPFACS that communicate directly with the principal.

(5) Table 4-4 provides a guide to CONOPS backup stations.

TABLE 4-4, CONOPS SETUP

Note: The forward element of each station is assigned no secondary backup. If the main CP is lost then the forward element assumes control of all operations as is backed-up by the secondary backup station previously assigned to the main.

STATION	PRIMARY BACKUP	SECONDARY BACKUP
SACC	The MAGTF FFCC MAIN backs up the SACC until the CATF has transitioned control of the landing force to the CLF. After the transition of control ashore, SACC has no backup.	
MAGTF FFCC MAIN	MAGTF FFCC FWD	GCE FSCC MAIN
MAGTF FFCC FWD	MAGTF FFCC MAIN	
FORCE ARTY HQ MAIN	FORCE ARTY HQ FWD	MAGTF FFCC
FORCE ARTY HQ FWD	FORCE ARTY HQ MAIN	
GCE FSCC MAIN	GCE FSCC FWD	MAGTF FFCC MAIN
GCE FSCC FWD	GCE FSCC MAIN	
TACC	TAOC	DASC MAIN
DASC MAIN	DASC FWD	TACC MAIN
DASC FWD	DASC MAIN	TACC MAIN
RAOC	LOC	DIV FSCC MAIN in MEF, in MEF FWD and MEU operations no CONOPS secondary however functions of the RAOCC is performed by the GCE FSCC if the RAOCC is not operational.
REGT FSCC MAIN	REGT FSCC FWD	SISTER REGT FSCC MAIN
REGT FSCC FWD	REGT FSCC MAIN	
BN FSCC MAIN	BN FSCC FWD	SISTER BN FSCC MAIN
BN FSCC FWD	BN FSCC MAIN	
REGT FDC MAIN	REGT FDC FWD	GS BN FDC MAIN
REGT FDC FWD	REGT FDC MAIN	
TPC MAIN	TPC FWD	REGT FDC MAIN in MEF; in MEF FWD and MEU operations no CONOPS secondary however functions of the TPC is performed by the REGT FDC if the TPC FWD is not operational.
TPC FWD	TPC MAIN	
DS BN MAIN FDC	DS BN FDC FWD	R BN FDC MAIN or REGT FSCC MAIN in lieu of R BN
DS BN FDC FWD	DS BN FDC MAIN	
R BN FDC MAIN	R BN FDC FWD	DS BN FDC MAIN
R BN FDC FWD	R BN FDC MAIN	
GS & GSR BN FDC MAIN	BN FDC FWD	REGT FDC MAIN
GS & GSR BN FDC FWD	BN FDC MAIN	
BTRY FDC	SISTER BTRY FDC	None

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C. **CONOPS COMMUNICATIONS CHANGES.** The backup station exercises command and control of the principal's subordinates by establishing communications with these stations. Because the forward element of each station is the primary backup for that station and has the same communications requirements, no additional communications setup is required. However, secondary backups

require some changes.

(1) **SACC.** The SACC is backed up by the MAGTF FFCC MAIN prior to transition of control to the Commander, Landing Force. Since the SACC does not move ashore no backup is provided after this transition of control. The MAGTF FFCC MAIN establishes communications with agencies outside the MEF as required by the operation. The SACC provides the necessary CONOPS communications configuration to the MAGTF FFCC MAIN and any other station affected by this change.

(2) **MAGTF FFCC.** The communications requirements of the secondary back for a MAGTF FFCC depends on the echelon.

(a) **MEF FFCC MAIN.** The secondary backup for the MEF FFCC MAIN is the division FSCC MAIN. The MEF FFCC MAIN commands and controls the subordinate and supporting regiments via communications on the MEF FFC net. This net is guarded by the division FSCC MAIN and thus no additional communications requirements are imposed during CONOPS.

(b) **MEF FWD FFCC MAIN.** The secondary backup for the MEF FWD FFCC is the regimental FSCC. The MEF FWD FFCC commands and controls the subordinate and supporting units via communications on the MEF FWD FFC net. This net is guarded by the regimental FSCC and thus no additional communications requirements are imposed during CONOPS.

(c) **MEU FFCC MAIN.** The secondary backup for the MEU FFCC MAIN is the battalion FSCC. The MEU FFCC MAIN commands and controls the subordinate and supporting units via communications on the MEU FFC net. This net is guarded by the battalion FSCC and thus no additional communications requirements are imposed during CONOPS.

(3) **GCE FSCC.** As in MAGTF FFCC CONOPS, the backup of the GCE FSCC depends on the echelon of the operation.

(a) **Division FSCC.** The secondary backup for the division FSCC MAIN is the MEF FFCC MAIN. The division FSCC MAIN commands and controls the subordinate and supporting regiments via communications on the division FSCC net. This net is not guarded by the MEF FFCC MAIN. During CONOPS the MEF FFCC MAIN directs the subordinate and supporting units of the division to establish communications on the MEF FFC net. The MEF FFCC MAIN provides a communications configuration to support this to the division FSCC MAIN for dissemination prior to the need for CONOPS.

(b) **Regimental FSCC.** The secondary backup for the regimental FSCC MAIN is the MEF FWD FFCC MAIN. The regimental FSCC commands and controls the subordinate and supporting units via communications on the regimental FSC net. This net is not guarded by the MEF FWD FFCC MAIN. During CONOPS the MEF FWD FFCC MAIN directs the subordinate and supporting units of the regiment to establish communications on the MEF FWD FFC net. The MEF FWD FFCC MAIN provides a communications configuration to support this to the regimental FSCC for dissemination prior to the need for CONOPS.

(c) **Battalion FSCC.** The secondary backup for the battalion FSCC MAIN is the MEU FFCC. The battalion FSCC MAIN commands and controls the subordinate and supporting units via communications on its three COF nets. These nets are not guarded by the MEU FFCC MAIN. During CONOPS the MEU FFCC MAIN directs the subordinate and supporting units of the battalion to establish communications on the MEU FFC net. The MEU FFCC MAIN provides a communications configuration to support this to the battalion FSCC for dissemination prior to the need for CONOPS.

(4) **NON-GCE FSCCs.**

(a) **Regimental FSCC.** The secondary backup for the regimental FSCC MAIN is a selected sister regimental FSCC MAIN. The regimental FSCC MAIN commands and controls the subordinate and supporting units via communications on the regimental FSCC net. This net is not guarded by the sister regimental FSCC. During CONOPS the sister regimental FSCC directs the subordinate and supporting units of the regiment to establish communications on its regimental FSC net. The sister regimental FSCC MAIN provides a communications configuration to support this to the regimental FSCC for dissemination prior to the need for CONOPS.

(b) **Battalion FSCC.** The secondary backup for the battalion FSCC is another battalion FSCC of the same regiment. The battalion FSCC commands and controls the subordinate and supporting units via communications on its three COF nets. These nets are not guarded by the sister battalion FSCC. During CONOPS the sister battalion FSCC directs the subordinate and supporting units of the battalion to establish communications on the sister battalion's own COF nets. The sister battalion FSCC provides a communications configuration to support this to the battalion FSCC for dissemination prior to the need for CONOPS.

(5) **Rear Area Operations Center.** The secondary backup for the RAOC is the division FSCC in MEF operations. Since both the RAOC and the division FSCC guard the MEF FFC net, no additional communications configuration is required. In MEF FWD and MEU MAGTFs no secondary backup is established. In these size units the RAOC function is performed by the GCE FSCC if the RAOC is lost.

(6) **ARTILLERY FDCs and TPC.**

(a) **Regimental FDC.** The secondary backup for the regimental FDC MAIN is a GS battalion FDC MAIN. The regimental FDC commands and controls the subordinate battalions via communications on the regimental FD net. This net is guarded by the GS battalion FDC. However, the battalion is required to add the division FSC net to the nets it guards. The division FSCC provides a communications configuration to support this to the regimental FDC for dissemination prior to the need for CONOPS.

(b) **Target Processing Center.** No secondary backup is provided.

If the TPC is unable to operate then the function of the TPC is assumed by the regimental FDC. A communications configuration that allows the regimental FDC to communicate with the artillery radars and meteorological stations on the existing radar/MET net is provided by the TPC.

(c) **Battalion FDC.** The secondary backup of the battalion FDC depends the battalion's tactical mission and the availability of a reinforcing battalion.

1) **DS battalion FDC.**

a) If a reinforcing battalion is available this unit is the secondary backup for the DS battalion FDC. The DS battalion commands and controls its subordinates via three COF nets and communicates with the supported regiment via the regimental FSCC net. The reinforcing unit guards none of these nets. During CONOPS the reinforcing battalion FDC directs its own batteries onto the COF nets of the DS battalion, switching to those frequencies. The reinforcing battalion then switches the FD net previously used to communicate with the DS battalion to the regimental FSC net frequency. The DS battalion in cooperation with the regimental FSCC provides the communications configuration to support CONOPS.

b) If no reinforcing battalion FDC is available then the secondary backup for the battalion FDC is the supported regimental FSCC. The battalion FDC commands and controls the battalion via communications on three COF nets. These nets are not guarded by the regimental FSCC. During CONOPS the regimental FSCC directs the subordinate units of the DS battalion to establish communications on the regimental FSC net. The regimental FSCC provides a communications configuration to support this to the DS battalion FDC for dissemination prior to the need for CONOPS.

2) **GS and GSR battalion FDCs.** The secondary backup for the battalion FDC is the regimental FDC. The battalion FDC commands and controls the battalion via communications on three COF nets. These nets are not guarded by the regimental FDC. During CONOPS the regimental FDC directs the subordinate units of the GS or GSR battalion to establish communications on the regimental FD net. The regimental FDC provides a communications configuration to support this to the GS or GSR battalion FDC for dissemination prior to the need for CONOPS.

(d) **Battery FDCs.** Battery FDCs do not conduct secondary CONOPS. If the battery FDC is destroyed and operational howitzers survive then these are assigned to another battery for control by that battery's FDC. The battalion FDC is not adequately equipped to provide a technical gunnery solution and thus does not act as a backup.

D. **UNITS BACKED UP**. To ease in the determination of entries at each station tables 4-5, 4-6 and 4-7 provide the entries for units backed up by each station in MEF, MEF FWD and MEU level operations respectively.

TABLE 4-5, CONOPS UNITS BACKED UP IN MEF OPERATIONS			
STATION	UNIT BACKED UP #1	UNIT BACKED UP #2	UNIT BACKED UP #3
SACC MAIN			
MEF FFCC MAIN	SACC prior to transition of control to CLF, MEF FFCC FWD after transition of control.	DIV FSCC MAIN	FORCE ARTY HQ MAIN
MAGTF FFCC FWD	MAGTF FFCC MAIN		
FORCE ARTY HQ MAIN	FORCE ARTY HQ FWD		
FORCE ARTY HQ FWD	FORCE ARTY HQ MAIN		
DIV FSCC MAIN	DIV FSCC FWD	MEF FFCC MAIN	RAOCC
DIV FSCC FWD	DIV FSCC MAIN		
TACC MAIN	TAOC		
DASC MAIN	DASC FWD	TACC MAIN	
DASC FWD	DASC MAIN		
RAOC	LOC*		
REGT FSCC MAIN	REGT FSCC FWD	SISTER REGT FSCC MAIN	DS BN FDC
REGT FSCC FWD	REGT FSCC MAIN		
BN FSCC MAIN	BN FSCC FWD	SISTER BN FSCC MAIN	
BN FSCC FWD	BN FSCC MAIN		
REGT FDC MAIN	REGT FDC FWD	GS BN FDC MAIN	TPC MAIN
REGT FDC FWD	REGT FDC MAIN		
TPC MAIN	TPC FWD		
TPC FWD	TPC MAIN		
DS BN MAIN FDC	DS BN FDC FWD	R BN FDC MAIN	
DS BN FDC FWD	DS BN FDC MAIN		
R BN FDC MAIN	R BN FDC FWD	DS BN FDC MAIN	
R BN FDC FWD	R BN FDC MAIN		
GS & GSR BN FDC MAIN	BN FDC FWD	REGT FDC MAIN	
GS & GSR BN FDC FWD	BN FDC MAIN		
BTRY FDC	None, if automated equipment is inoperable the battery FDC operates using alternate means of tactical and technical fire control.		

1.

TABLE 4-6 CONOPS UNITS BACKED UP IN MEF FORWARD OPERATIONS			
STATION	UNIT BACKED UP #1	UNIT BACKED UP #2	UNIT BACKED UP #3
SACC MAIN	TACC		
MEF FWD FFCC MAIN	MEF FWD FFCC FWD	REGT FSCC MAIN	SACC
MEF FWD FFCC FWD	MEF FWD FFCC MAIN		
TACC	TAOC		

TABLE 4-6 CONOPS UNITS BACKED UP IN MEF FORWARD OPERATIONS			
STATION	UNIT BACKED UP #1	UNIT BACKED UP #2	UNIT BACKED UP #3
DASC MAIN	DASC FWD	TACC MAIN	
DASC FWD	DASC MAIN		
RAOC	LOC*		
REGT FSCC MAIN	REGT FSCC FWD	MEF FWD FFCC MAIN	DS BN FDC
REGT FSCC FWD	REGT FSCC MAIN		
BN FSCC MAIN	BN FSCC FWD	SISTER BN FSCC MAIN	
BN FSCC FWD	BN FSCC MAIN		
DS BN MAIN FDC	DS BN FDC FWD		
DS BN FDC FWD	DS BN FDC MAIN		
BTRY FDC	None, if automated equipment is inoperable the battery FDC operates using alternate means of tactical and technical fire control.		

1.

TABLE 4-7 CONOPS UNITS BACKED UP IN MEU OPERATIONS			
STATION	UNIT BACKED UP #1	UNIT BACKED UP #2	UNIT BACKED UP #3
SACC MAIN	TACC MAIN		
MEU FFCC MAIN	MEU FWD FFCC FWD	BN FSCC MAIN	SACC
MEF FWD FFCC FWD	MEF FWD FFCC MAIN		
TACC	TAOC	DASC MAIN	
DASC MAIN	DASC FWD	TACC MAIN	
DASC FWD	DASC MAIN		
RAOC	LOC*		
BN FSCC MAIN	BN FSCC FWD	MEU FFCC MAIN	
BN FSCC FWD	BN FSCC MAIN		
BTRY FDC	None, if automated equipment is inoperable the battery FDC operates using alternate means of tactical and technical fire control.		

1.

2. **CONTINUITY OF OPERATIONS**. The following is a step by step procedure for the passage of control in both planned and unplanned situations.

A. **PLANNED CONOPS**

(1) The PRINCIPAL decides to institute CONOPS.

(2) The principal decides which backup, primary or secondary, will be used.

(3) The principal contacts the backup and all subordinates and informs them that CONOPS will take place and designates the time of the change.

(4) The principal (contacting net control if necessary) dictates changes to the comm configuration in use to allow all stations to communicate.

(a) This may require additions to the destination units and changes to the net ranking of adaptive VMF nets.

(b) This may require nets be added for some stations.

(5) The principal disables automatic purging of MFRs and INACTIVE TARGETS if these are enabled.

(6) Set intervention criteria for all missions to increase situational awareness.

(7) The BACKUP prepares for CONOPS.

(a) The BACKUP receives the notification of impending CONOPS.

(b) The backup edits the CONOPS information window of the principal and his own CONOPS data making the appropiate entries.

(c) The BACKUP makes all comm changes as indicated by the PRINCIPAL and the net control.

(d) The BACKUP makes any required changes to his data distribution scheme to ensure continued information flow for all satellite units.

(e) The BACKUP disables automatic purging of MFRs and INACTIVE TARGETS if these are enabled. This is required to allow the principal to re-assume control after CONOPS and have the same active and inactive targets as the backup. The principal must receive MFRs from the backup for any missions that were active at the time the principal gave up control and that were ended while the backup had control.

(8) The PRINCIPAL SATELLITES prepare for CONOPS by making any required changes to the communications configuration.

(9) Initiate CONOPS.

(a) The BACKUP edits the CONOPS window of the principal.

(b) Select the PRINCIPAL and EDIT.

(c) Select OPTIONS from the BASIC UNIT INFO window and select the PRINCIPAL CONOPS form. This opens the CONOPS INFORMATION window.

(d) Change ADDRESS MISSIONS TO: PRIMARY (SECONDARY) and check the ACTIVE UNIT ORGANIZATION box. OK the window.

(e) Observe the medium level alert indicating the successful transition to CONOPS.

(f) Notify principal that unit organization is complete.

(g) The PRINCIPAL SATELLITES.

(h) Select the PRINCIPAL and EDIT.

(i) Select OPTIONS from the BASIC UNIT INFO window and select

the CONOPS form. This opens the CONOPS INFORMATION window.

(j) Change ADDRESS MISSIONS TO: PRIMARY (SECONDARY) and check the ACTIVE UNIT ORGANIZATION box. OK the window.

(k) Observe the medium level alert indicating the successful transition to CONOPS.

(l) Notify principal that unit organization is complete.

(m) The PRINCIPAL waits for all units to report that unit organization is complete. The principal then:

(n) Clears all fire missions from IP's.

(o) Select the PRINCIPAL unit data and EDIT.

(p) Select OPTIONS from the BASIC UNIT INFO window and select the CONOPS form. This opens the CONOPS INFORMATION window.

(q) Change ADDRESS MISSIONS TO: PRIMARY (SECONDARY) and check both the ACTIVE UNIT ORGANIZATION box and the MISSION ROUTING box. OK the window.

(r) Observe the medium level alert indicating the successful transition to CONOPS.

(s) This action causes the computer at the principal to transmit the active target list to the backup.

(t) The BACKUP receives a medium level alert indicating the active target list has been received. The BACKUP displays the principal's CONOPS window and clicks MISSION ROUTING. A medium level alert is received indicating success in routing and a second indicating that the target list has been successfully merged.

(u) CONOPS are now established. The principal can now close station. All fire mission routes from the principal's immediate higher, subordinate and supporting units are altered to cause missions to be received at the backup. The backup also possesses the principal's active targets to allow these missions to be processed.

(10)**RECOVERY FROM CONOPS**

(a) PRINCIPAL station brings computer up and achieves communications with all required stations.

(b) PRINCIPAL notifies BACKUP that the principal is prepared to assume control of its own units.

(c) The BACKUP notifies the principal and all principal satellites of the time that CONOPS will be de-activated.

(d) At the established time the backup, the principal and all satellites edit the principal's unit data to display the CONOP INFORMATION window. Change the address missions to field back to PRINCIPAL.

(e) The backup alerts the observers, principal and satellite

stations to change their comm to conform to normal operations. The backup should maintain the CONOPS comm configuration until CONOPS are completed.

(f) The BACKUP displays the MISSION INFO ROUTING window and adds the principal for the reception of MFRs. Change the SINCE TIME to the time the principal station gave up control.

(g) The backup notifies the principal that CONOPS are complete and then changes his comm configuration to that used during normal operations.

(h) Missions that are still active at the backup are automatically routed through that station until ended. If a separate comm configuration is used for CONOPS it must remain in effect until the backup has finished processing all fire missions from the principal satellites.

(i) The BACKUP transmits all geometry to the principal by transferring the current plan.

(j) The PRINCIPAL clicks 1 on the his own unit symbol to select the unit. The PRINCIPAL requests updates of all satellites by holding 3 and releasing on REQUEST STATUS. This action will update all unit data of subordinates, commanding, supporting and supported OPFACS.

B. **UNPLANNED CONOPS.** Unplanned CONOPS take place when the principal is unable to operate or is lost through battle damage.

(1) Based on unit SOP the determination is made that the principal is no longer operating and which backup assumes control.

(2) The BACKUP directs the principal satellites to prepare to enter CONOPS.

(3) Any comm configuration changes required are made and comm checks conducted.

(4) The backup makes any necessary data distribution changes.

(5) The backup waits for all satellites to report that they are ready to enter CONOPS. When notification has been received:

(a) The BACKUP:

1) Selects the PRINCIPAL unit data and EDIT.

2) Selects OPTIONS from the BASIC UNIT INFO window and select the CONOPS form. This opens the CONOPS INFORMATION window.

3) Change ADDRESS MISSIONS TO: PRIMARY (SECONDARY) and check both the ACTIVE UNIT ORGANIZATION box and the MISSION ROUTING box. OK the window.

4) Observe the medium level alert indicating the successful transition to CONOPS.

5) This action causes the computer at the backup to query

the satellites for copies of their active target list. Each satellite does not automatically transmit his entire active target list. Instead, only those targets that would be associated with the principal are sent.

NOTE: The stations that have been queried and the status of each query can be determined by examining the CONOPS RESPONSE window. (Click 1 on MISSION PROCESSING, CONOPS RESPONSES.)

6) The backup waits until the medium level alert ACTIVE TARGET LIST HAS BEEN MERGED is received. This indicates that all satellites queried have responded. If comm can not be established with all satellites or for some other reason a satellite does not respond to the query then the merging of the target list does not take place. This is a decision point for the back-up that allows two options:

a) Wait for the satellite to respond, or

b) Manually merge the target lists from those stations that did respond. To manually merge these list the operator displays the CONOPS RESPONSES window by clicking 1 on MISSION PROCESSING, CONOP RESPONSES. On the CONOPS RESPONSES window click 1 on CONTINUE.

7) After the target lists have been merged, the BACKUP directs the satellite stations to execute CONOPS.

8) Upon direction of the backup, the SATELLITES:

a) Display the principal's BASIC UNIT INFO window by clicking 1 on the unit symbol and clicking and holding 3 to display the pop up menu. Release on EDIT. Or,

b) Click 1 on UNITS, EDIT, select the principal's unit ID from the list and click 1 on OK.

9) Display the CONOPS window of the principal by clicking 1 on OPTIONS, CONOPS.

a) Click 1 on ACTIVE UNIT ORGANIZATION.

b) A medium level alert is displayed indicating the successful transition to CONOPS.

C. **GENERAL CONOPS NOTES**

(1) All steps in planned and unplanned CONOPS must be executed in order to cause the desired behavior. This requires a team approach that can only be achieved by training and drill.

(2) All stations must be aware that the potential exists for messages to be lost during the transition to CONOPS, especially in unplanned CONOPS. Be prepared to respond to alerts such as subsequent adjustments received that are not related to an active mission (that part of the active target list was not sent or the FO failed to make appropriate comm changes.)

(3) Assembly of the target list in planned or unplanned CONOPS can take a number of minutes depending on the quantity of targets and the speed of the communications medium. Use the CONOPS RESPONSE window to determine status of this operation.

CHAPTER FIVE

GUIDANCE MANAGEMENT

1. **General**. Incoming fire missions and fire plan targets are checked against guidance entered at each fire support and fire direction echelon. To ensure rapid and efficient attack of targets and fire plan scheduling this guidance data must be managed.

2. **Guidance messages**. A number of guidance windows must be maintained to manage the fire support system. Table 5-1 provides a synopsis of these windows and their functions. This is not a complete list but is sufficient to provide a basis for operations.

Table 5-1, GUIDANCE WINDOWS

Window	Key fields	Effect
Target selection standards	MAX TLE, MAX REPORT AGE, RELIABILITY	Provides the maximum target location error and report age in minutes acceptable for attack of each target category and type. Reliability is checked for target category and type against the sensor. This applies to ATI targets but can be made to apply to calls for fire by selecting **Check Calls for Fire against TSS**.
High Value Target List		Allows the assignment of desired effects (destroy, neutralize, suppress or specified), when to attack (immediate, as acquired or planned) and the target value. These factors are established for each target category. The value assigned for the category becomes a deciding factor in mission value for targets in each category.
Target Management Matrix	High Payoff Targets	High Payoff Targets are assigned a relative value. This value contributes to the mission value.
	Non-High Payoff Targets	Non-High Payoff Targets are assigned value in this window which overrides the value assigned their target category in the High Value Target List Window. When to attack and desired effects are established for each target here and applied by the software based on this window and not the HVT list. In addition IEW coordination and TDA may be checked here.
	Unassigned Targets	Unassigned targets may be moved into this block and assume the value given in the HVTL.
	Excluded Targets	Excluded targets are precluded from attack.
Mission Prioritization Window	Weight	Weight allows each of the four factors (TARGET TYPE, ON-CALL VALUE, PRIORITY OF FIRE VALUE and TARGET AREA OF INTEREST VALUE) that contribute to mission value to be weighed or ranked against each other. These along with the values set in the TMM and HVT windows determine the order of firing for incoming missions.

Table 5-1, GUIDANCE WINDOWS		
Window	Key fields	Effect
	Priority of Fires	Priority of Fires ranks each maneuver unit. When a call for fire is received from a target acquisition asset that supports the ranked unit, the priority of fires value is used in determining the mission value of the fire mission. All subordinate and supported maneuver units should be ranked.
	Target Area of Intrest.	Target areas of intrest (TAIs) must be entered as geometries and are assigned a number from 1 to 99, prioritizing them. When a mission is located within a TAI the mission value is further added to reflecting this priority number.
	On-Call Targets	By selecting the on-call targets radio button an on-call target is assigned the value of 100. By not selecting the on-call radio button a value of 0 is used to compute the value assigned to a mission generated on a target in the on-call list.
	Fire Mission Cutoff Values	Fire mission cutoff values provides the minimum mission value that is acceptable for the attack of an FS asset on a target. A value is established for each fire support asset available to the OPFAC. The lower the value, the more fire missions that may be assigned to the station. A lower value also allows expenditure of FS assets on lower value targets.
System Preference Tables	SYSTEM PREFS	This table allows the assignment of preferential attack systems to engage each target type. FA, AIR, NGF and MORTARS can be assigned a value from 1 (most preferred) to 4 (least preferred) or R (restricted) or N (none or no preference). Available only at an FSCC/FFCC.
	UNIT PREFS	FS unit preferences provide the computer with the name of the unit to which it must communicate to fire each FS asset, and allows the computing of those assets when conducting DETAILED fire mission processing. This is the supporting or command unit that has access to the asset. In lieu of an entry here, the computer uses the command-supported relationships to search for fire support assets.
MORTAR/FA RESTRICT-IONS	UNIT WITH RESTRICTION	Units can be prevented from firing selected shells and/or fuzes. Units may also be assigned MAX FIRING UNITS/TARGET, the default is 0, and an entry must be made to allow massing. Units may also be assigned maximum volleys that can be fired by a single fire support unit. Lowering this value causes assets to mass fires more frequently to achieved desired effects. MAX VOLLEYS must be established at each OPFAC, for that OPFAC, to allow that OPFAC to mass FU's. In addition MAX VOLS must be established for all FU's to be effective.

Table 5-1, GUIDANCE WINDOWS		
Window	Key fields	Effect
Target Decay Time Window		This window allows entry of the number of hours and minutes a target is considered valid after it is reported. If these values are allowed to default to 0, targets of that specific category and type will not be allowed to be fired because the computer assumes the target is no longer valid as soon as it is reported.

1.

2. **Responsibility**. The responsibility for creating and disseminating guidance is an intrinsic element of command and thus resides with the force commander.

A. **Prior to establishment of the landing force ashore.** Prior to establishment of the landing force ashore, the MAGTF FFCC creates guidance in accordance with the CATF and CLF intent, orders and verbal direction. This guidance is transmitted to the LFOC and subordinate FSCCs and fire support assets controlled by the MAGTF FFCC.

B. **After establishment of the landing force ashore.** After establishment of the landing force ashore, the GCE FSCC modifies his guidance in accordance with the CLF and GCE commander's intent, orders and verbal direction. This guidance is transmitted to the LFOC (AFLOAT) and subordinate FSCCs, FDCs and fire support assets.

C. **Changes to disseminated guidance.** Changes to guidance disseminated by higher echelons is necessary to allow the AFATDS computer to perform the functions of differing echelons and roles. Table 5-2 furnishes instructions for changes to guidance messages made at various stations of the MAGTF.

Table 5-2, PERMISSIBLE GUIDANCE CHANGES		
MESSAGE	OPFAC	AUTHORIZED CHANGES
MSN PRIORITIZATION	MAGTF FFCC	Enter the PRIORITY OF FIRES field to reflect the rank of each subordinate unit that possesses a ZOR. Adjust FM CUTOFF VALUES so that AIR and NSFS can be assigned missions of value equal to that desired by the CATF/CLF without attacking targets of little value to the tactical situation. Change UNIT PREFS so that the AIR unit and NGF units to which fire missions will be assigned are indicated.
	GCE FSCC	Enter the PRIORITY OF FIRES field to reflect the rank of each subordinate unit that possess a ZOR. Prior to the assumption of control by the CLF, FM CUTOFF FACTORS are per CATF guidance from the SACC. After CLF is established ashore, adjust FM CUTOFF VALUES so that AIR, NSFS, and ARTY can be assigned missions of value equal to that desired by the CLF without attacking targets of little value to the tactical situation. Change UNIT PREFS so that the AIR unit, NGF units and ARTY unit to which fire missions will be assigned are indicated.

Table 5-2, PERMISSIBLE GUIDANCE CHANGES		
MESSAGE	OPFAC	AUTHORIZED CHANGES
	SUBORDINATE FSCC	Enter the PRIORITY OF FIRES field to reflect the rank of each subordinate unit. Alter fire mission cutoff factors so that least used or most perishable assets possess the lowest factor.
	REGT FDC	Same guidance as per GCE FSCC. UNIT PREFS is blank.
	BN FDC	Same guidance as the supported unit. For tactical missions of DS, R, GSR this is the guidance provided by the supported regimental FSCC or reinforced FDC. For the GS mission guidance is the same as the regimental FDC.
	BTRY FDC	Do not alter guidance received from BN FDC.
FA RESTRICTIONS	MAGTF FFCC	NONE.
	GCE FSCC	Enter GCE FSCC as UNIT and MAX VOL is maximum number of volleys any arty fire unit will fire and MAX FU equals number of firing batteries available in the supporting artillery unit.
	REGT FSCC	Enter RFSCC as UNIT and MAX FU equals number of firing batteries available in DS and R missions. Enter each FU as UNIT and establish MAX VOL for each FU.
	BN FSCC	NONE.
	REGT FDC	Enter the REGT FDC as the unit and MAX FU is the number of subordinate firing units. Enter each FU as UNIT and establish MAX VOL for each FU.
	BN FDC	Enter BN FDC as UNIT and MAX FU equals number of firing batteries available in DS and R missions. Enter each FU as UNIT and establish MAX VOL for each FU.
	BTRY FDC	MAX VOL is as received from BN FDC; MAX FU is one.
MORTAR RESTRICTIONS	BN FSCC	Enter BN/FSCC as UNIT and MAX FU equals one. Enter Mort.PLT as UNIT and MAX VOLS.
ATTACK ANALYSIS	FSCCs	Detailed is used at the Regimental FSCC and summary is used at all other FSCCs.
	FDCs	Detailed by default.

1. **Example guidance distribution.** The following is an example of the distribution of guidance and the changes made at various stations.

A. **Situation.** The landing force has transitioned control ashore and is changing the current situation guidance to conform to the latest situation. The RLT commander has assigned the focus of effort to 1/5. 1/5 is mounted in a combination of LVTs and LAVs and supported by a tank platoon. RLT OBJ 1 is designated TAI #1. To occupy RLT OBJ 1, 1/5 must defeat specific ANTI ARMOR and ANTI AIR target types. A direct support battalion of three M198 batteries and a reinforcing battalion with an additional three batteries of M198 howitzers are available for artillery support. A MAG is providing CAS and a

GS NSFS ship is on station.

(1) **HVT LIST.** At the RLT FSCC target categories MANEUVER (which contains anti-armor weapons) and ADA (containing anti-air targets) are raised to values above all other targets. The HVT LIST is manually transmitted to the distribution lists SUBORDINATES and SUPPORTING.

(a) **BN FSCCs.** The battalion FSCCs store the HVT LIST.

(b) **BN FDC.** The battalion FDC stores the HVT LIST and manually transmits the data to the battery FDCs.

(c) **BTRY FDCs.** The battery FDCs store the HVT LIST.

(2) **TMM**. The RLT FSCC places ANTI-ARMOR and ANTI-AIR targets in the high payoff target list and weighs them above other targets.

(a) **BN FSCCs.** The battalion FSCCs store the TMM.

(b) **BN FDC.** The battalion FDC stores the TMM and manually transmits the data to the battery FDCs.

(c) **BTRY FDCs.** The battery FDCs store the TMM.

(3) **Mission Prioritization**.

(a) **The RLT FSCC.**

1) Weighs TARGET TYPE at 50, ON CALL TARGETS at 10, PRIORITY OF FIRE at 20 and TAIs at 20. This will cause the computer to determine mission value weighed heavily upon the HVT and HPT targets, less so if the target is from an asset supporting the priority of fire ZOR or from within the TAI geometry and even less if it is an on call target.

2) Fire mission cutoff factors are assigned at 10 for AIR, 15 for NGF, 20 for FA and 99 for mortars. The RLT FSC has assigned these values to give AIR, the most "perishable" FS asset, greater opportunity for target assignment followed by NSFS and ARTY. MORTAR is assigned the maximum since it is not available at the regimental level.

3) Priority of Fires is assigned to 1/5 (the actual priority of fire) with a rank of 1, followed by 2/5 (supporting 1/5's attack) with 2, and 3/5 (in reserve) with a value of 3. This will cause fires to 1/5 to be processed in advance of the other battalions. 5th Marine Regiment would also receive a priority ranking.

4) TAI is entered with the TAI geometry for the RLT OBJ 1. This will cause those targets located in this TAI to achieve the value based on the weight assigned in para. (a) above.

(b) **BN FSCCs.** The battalion FSCCs change the PRIORITY OF FIRES to reflect priorities within the battalion (by company), assign Fire Mission Cutoff factors to reflect his organic mortars and store the Mission Prioritization message.

(c) **BN FDC.** The battalion FDC stores the Mission Prioritization message and manually transmits the data to the battery FDCs.

(d) **BTRY FDCs.** The battery FDCs store the TMM.

(4) **Fire Support System Preference Tables.**

(a) **RLT FSCC.** The regimental FSCC establishes the preference for ANTI-AIR and ANTI-ARMOR targets as 1 for AIR, 2 for NGF and 3 for FA. Mortars are not entered since they are not available at the infantry regimental level. UNIT PREFS is assigned with FA UNIT ID as the battalion FDC, AIR UNIT ID as the DASC and NGF UNIT ID as the GS NSFS ship. MORTAR UNIT ID is not entered since mortars are not available at this echelon.

(b) **BN FSCCs.** The battalion FSCCs change the values to 1 for Mortars, 2 for AIR, 3 for NGF and 4 for FA for all target types. The criterion being that mortars are available at the battalion and the other assets are available to the command unit, the Regt FSCC. UNIT PREFS is altered with FA UNIT ID, AIR UNIT ID and NGF UNIT ID as the regimental FSCC since this is the station that must receive the request to assign these assets. MORTAR UNIT ID is not entered since mortars are directly controlled at this echelon.

(c) **FDCs.** Not used.

(5) **FA Preference Tables**. Only the battalion FDC enters this message. The batteries of the battalion in DS are assigned a rank of 1 for the attack of all targets. The R battalion name is assigned a rank of 2. This allows the DS battalion batteries to be considered before the R battalion is assigned to attack a target.

(6) **FA Restriction Tables.**

(a) **RLT FSCC.** The regimental FSCC establishes the FA Restrictions Table by entering the regimental FSCC's name in the UNIT WITH RESTRICTIONS field. MAX FIRE UNITS/TGT is set at 6. Then enter FU's with restrictions MAX VOL's is set at 5. This causes a maximum of 6 fire units (3 DS and 3 R) to be assigned to a target and no more than 5 volleys to be fired by any unit. This guidance is then transmitted to supporting/subordinate units.

(b) **BN FSCCs.** The battalion FSCCs change the UNIT WITH RESTRICTIONS to their own name and store the message.

(c) **BN FDC.** The battalion FDC changes the UNIT WITH RESTRICTIONS to their own name and stores the message.

(d) **BTRY FDCs.** The battery FDCs change the UNIT WITH RESTRICTIONS to their own name and change MAX FIRE UNITS/TGT to 1, then store the message.

(7) **Mortar Restriction Tables.** The Mortar restrictions table is entered at the battalion FSCC. The battalion FSCC's name is entered in the UNIT WITH RESTRICTIONS field. MAX FIRE UNITS/TGT is set at 1. The mortar plt is then entered in the UNITS WITH RESTRICTIONS with a MAX VOL's of 4.

1. **FIRE MISSION PROCESSING.** Fire mission processing is a key function of the fire support system. AFATDS uses guidance's, task organization and received mission information to select the appropriate fire support asset and to route the fire mission to the appropriate opfacs. Processing through multiple opfacs is usually required to move the mission from the requester to the shooter. The processing and route may be transparent to some of the opfacs depending upon intervention criteria.

1. **INTERVENTION CRITERIA.**

A. **General.** AFATDS possesses the ability to use data base information to automatically process, coordinate and possibly deny fire missions without operator intervention. Intervention criteria allows operators to stop the automatic processing under given conditions for the purpose of review and change. Intervention criteria is comprised of a set of rules that govern this interruption of the automatic fire mission process. An almost endless number of intervention rules can be established. Each rule is built around six categories of mission information.

(1) **BATTLE AREA** defined by geometries of deep, close and rear can be used to define the focus of the opfac for fire mission intervention.

(2) **ATTACK OPTION** allows rules to be constructed for specific fire support systems.

(3) **MISSION PRECEDENCE** causes the rule to apply to missions of the selected precedence (as acquired, immediate, priority).

(4) **TARGET TYPE** allows the selection of a particular target type.

(5) **FILTERS** allows the rule to apply to failure of one of the six filters. These are target duplication, target selection standards, target buildup, IEW coordination, exclusion and coordination required.

(6) **ANALYSIS RESULT** causes missions to require intervention only when a specific recommended solution is determined. These results are SEND OTF, SEND FO, SEND FR or DENY.

(7) It must be noted that these six criteria be set in any combination to create a single rule. Multiple rules can be constructed.

B. **Default setup**. When the data base is initially constructed, a single default rule making all fire missions subject to intervention is incorporated. Deleting this rule causes all fire missions to process automatically.

NOTE: Missions assigned for attack by ATACMS are automatically displayed for operator intervention without regard to operator established intervention criteria.

C. **Tracking fire missions**. When a fire mission is processed with no intervention each opfac can maintain situational awareness of active missions in two ways.

(1) Active fire missions can be displayed on an overlay. This will cause any received fire mission, regardless of intervention criteria, to appear on the screen of the SHRD as a bold target symbol. The operator can ascertain information about the target by clicking on the symbol that appears.

(2) All fire missions that are received are placed in the active target list until the mission is ended by the reception of a mission fired report. At any time the operator can display mission information for any target.

(3) Either of the methods above allow the operator to display the target status window. The status window displays all fire mission messages received or transmitted for the mission in question. The status of the mission can also be requested or traced to obtain the current status of the mission at every station involved.

(4) Fire requests and fire orders may be printed when they are received and/or transmitted. This is accomplished by making entries in the CONFIGURE PRINTING SETUP. This function is accessed by selecting ALERTS & MESSAGES, MESSAGES, CONFIGURE PRINTING SETUP.

D. **INTERVENTION BY OPFAC**. This chapter recommends the intervention criteria that can be employed at each OPFAC.

(1) **Battalion FSCC**.

(a) Denied missions.

(b) Air and NSFS missions if these assets are available to the FSCC.

(2) **Regimental FSCC.**

(a) Denied missions.

(b) Any other rules as dictated by the FSC.

(3) **Division FSCC.**

(a) Denied missions.

(b) All fire missions in the rear battle area.

(c) All fire missions in the deep battle area.

(d) All air missions.

(4) **Battalion FDC**.

(a) All missions.

(5) **Regimental FDC**.

(a) All fire missions.

1. ATTACK ANALYSIS.

A. **Levels of Analysis.** The level of attack analysis can be altered at FSCCs (or, more accurately, any unit with a unit configuration window role of FSE/FSCC). Attack analysis levels are defined as summary and detailed.

(1) **Detailed Analysis.** Detailed attack analysis examines individual fire units based on range, angle T, ready status and ammunition on hand. It is performed for all NSFS, air and mortar units supporting an FSCC and can also be assigned for arty at the FSCC. All FDCs perform detailed attack analysis for their fire units.

(2) **Summary Analysis.** Summary attack analysis is the default selection at FSCCs for use in analyzing artillery capabilities. The FSCC performing summary analysis averages the ranges and angle T's of all fire units in direct support and reinforcing the direct support FDC. The best ready status and average values of range and angle T are assigned to the FDC. Ammunition on hand is not examined - only

that ammunition that the unit should be able to fire. The advantage of summary attack analysis is a minute increase in response time due to abbreviated processing. The disadvantage is that the FSCC may determine a solution for artillery that is unsupportable at the artillery battalion FDC and then must be returned unfired for reprocessing at the regimental FSCC.

(a) It is recommended that detailed attack analysis be used at the regimental FSCC for the following reason. The advantage of using detailed at the regimental FSCC is that a green option will not be sent to an artillery CP, where upon processing, a red option may be determined. The disadvantages of using detailed at the Regimental FSCC is that a higher volume of traffic is required to distribute detailed ammunition to the FSCCs. Also there is a greater processing time when using detailed attack analysis and the artillery CP's work is being duplicated at the FSCC.

(b) FFCCs and all other FSCCs will always use summary attack analysis.

1. FIRE MISSION ROUTING

A. **General.** Fire missions are routed through OPFACS to allow the selection of the optimum fire support asset, to provide a conduit for coordination and to increase situational awareness. The routing of the mission depends on the source, however the central hub of fire support is the FSCC.

B. **Battalion FSCC.** Fire missions that are requested by an artillery or mortar observer are transmitted to the battalion FSCC. The observer unit information must indicate that the battalion FSCC that the observer reports to is both the command and supported unit (COMMAND UNIT ID and SUPPORTED UNIT ID in the GENERAL UNIT INFORMATION window for the observer). The battalion FSCC normally possesses only organic mortars with which to engage the target. In any case the battalion FSCC computer will consider only those fire support assets that are commanded by or support the battalion FSCC. In other words, those units stored at the FSCC and that indicate the battalion FSCC name as their COMMAND UNIT ID or SUPPORTED UNIT ID in the GENERAL UNIT INFORMATION window. If the mission is recommended for denial or processing to an AIR or NSFS asset the mission appears in the intervention window and remains there until the operator takes action. If the battalion's organic mortars cannot adequately service the target, artillery, air and NSFS (when air and NSFS are held at a higher FSCC) may be selected. These missions are transmitted to the regimental FSCC because the battalion FSCC has entered the SYSTEM PREFERENCE TABLE, UNIT PREFERENCE with the regimental FSCC name (FA UNIT ID, AIR UNIT ID and NGF UNIT ID). The mission may be resolved in a number ways.

(1) **Coordination requests** are transmitted to the agencies responsible for violated boundaries or FSCMs. The transmitting computer will wait until the mission is approved to transmit the fire request to the regimental FSCC.

(2) **Mission Denied.** The mission may be denied either by failures of guidances or denial from an agency from which coordination was requested. The operator at the battalion FSCC may reprocess the mission.

(3) **Missions that do not require coordination** are transmitted to the regimental FSCC.

(4) **Missions requiring coordination with electronic warfare** assets (as indicated by guidance's) will transmit a request for coordination to the IEW agency listed in the MISSION ROUTING INFO window. Denial or approval will cause the mission to process as if coordination from another FSCC was required.

(5) **No Solution.** The computer may not be able to determine a solution. In this case the computer recommends "Denied, no capable option." The operator can select UNSUPPORTABLE causing the mission to be transmitted to the regimental FSCC (the battalion's support unit ID) in hope of finding additional assets.

(6) **Override.** The operator can override the computer solution and transmit any solution to any station.
NOTE: Overriding and transmitting a RED option does not allow the automatic routing of FO commands. (Applies to B-6 and C-3)

C. **Regimental FSCC.** The regimental FSCC processes the mission and intervenes only on denied missions. It should be noted that the mission may not be assigned to the same asset as predicted by the battalion FSCC if the guidances at the regiment differ from those at the battalion. The mission may be:

(1) Transmitted to any fire support asset that the regimental FSCC commands. If additional coordination is required, these requests are routed prior to transmitting the mission to the fire support asset.

(2) **Unsupportable.** The mission may be determined to be unsupportable. The operator can then transmit the mission, due to supported unit ID, to the division FSCC.

(3) **Override.** The operator can override the computer solution and transmit any solution to any station.

D. **Battalion FDC.** The battalion FDC processes the mission to subordinate battery FDCs. The battalion FDC always performs detailed attack analysis by unchangeable software default. Though several options may present themselves to the battalion FDC, one of three possible solutions will be selected by the battalion FDC.

(1) The fire mission can be passed to the fire unit(s) selected by the computer.

(2) The fire mission can be transmitted to any subordinate or reinforcing unit despite the computer selected option.

(3) **Unsupportable.** The mission can be returned to the regimental FSCC as unsupportable. This option should never be needed if the regimental FSCC is in detailed attack analysis, however, if unsupportable is selected the following will happen Missions returned to the regimental FSCC as unsupportable are reprocessed there and will most likely be transmitted to the division FSCC as unsupportable. This is the AFATDS method of "requesting reinforcing fires". Since the fire mission may be received again by the battalion FDC as part of a massed fire mission solution from the regimental FDC, any mission that is returned to the regimental FDC as unsupportable is immediately, manually deleted from the active fire target list by the battalion FDC.

(4) Fire missions will never be denied at the battalion FDC.

E. **Division FSCC.** The division FSCC processes any fire missions received but intervenes on only a few. NSFS missions are printed and handed off to the representative of this assets (unless automated communications are available to the these units). Artillery missions are passed to the regimental FDC for processing. Air missions are transmitted to the DASC where they will generate an ASR in the TARL of the TASM.

F. **Regimental FDC.** The regimental FDC processes received fire missions using detailed attack analysis. Orders to fire (OTFs) are passed to the subordinate battalion FDCs. Should a mission not be supportable it is returned as an unsupportable mission to the division FSCC, not denied by the regimental FDC.

1. RADAR FIRE MISSIONS AND THE TPC.

A. **General.** Radars held in general support missions are controlled by the TPC. The TPC will process all fire missions to the Regimental FDC by clicking unsupportable. Since TPC is commanded by the regimental FDC missions are then automatically passed to them.

B. **Coordination.** All radar fire missions require coordination since they will plot in the zone of a maneuver unit. Coordination is normally effected by coordination requests automatically generated at the regimental FDC not at the TPC since unsupportable missions do not require coordination until an attack option is determined.

C. **Radars assigned direct support missions to the battalion FDCs** are directly linked. Command and supported relationships of these radars are changed to reflect this and the fire missions transmitted are processed by the battalion FDC in the same fashion as FO request fire missions.

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CHAPTER SIX

DATA DISTRIBUTION

1. **DATA DISTRIBUTON**. Data distribution is the automatic retransmission of information between opfacs. This distribution is controlled by a combination of lists and associated criteria. The lists are composed of unit IDs grouped together and each list is associated with criteria. The criteria acts as triggers that must be "tripped" to cause the associated data to be transmitted.

1. **DISTRIBUTION SETUP.** Each station creates a set of data distribution rules to accomodate their operations.

A. **BATTALION FSCC**.

Table 6-1, BATTALION FSCC DATA DISTRIBUTION

MESSAGE	**THIS UNIT**	**HIGHER**	**SUBORDINATE**	**OTHER**
FSCMS	LIST A		LIST A	
BOUNDRY LNES	LIST A			
SITUATIONAL GRAPHICS	LIST A			
BATTLE AREAS				
NBC GRAPHICS	LIST A		LIST A	
SENSOR ZONES				
MOVEMENT GRAPHICS	PRIMARY CONOPS			
FASCAM AREA				
TAI	PRIMARY CONOPS			
FLOT	LIST A			
ZOR	LIST A			
PAH TAH				
BASIC UNIT	LIST A		LIST A	
GEN UNIT	LIST A		LIST A	

EQUIPMENT SUMMARY	PRIMARY CONOPS	LIST A
WEAPONS SUMMARY		
WEAPONS DETAILED		LIST A
AMMO SUMMARY		
AMO DETAILED		LIST A
FUEL INFO		LIST A
ENEMY UNIT	LIST A	LIST A
LIST: A	REGT FSCC, BN FWD	
DEFAULT LIST: PRIMARY CONOPS	BN FSCC FWD	

(1) **LISTS.** The battalion FSCC creates two lists as described in table 6-1.

(2) **CRITERIA.** Criterion for each list is ANY CHANGE.

B. **REGIMENTAL FSCC**.

Table 6-2, REGIMENTAL FSCC DATA DISTRIBUTION

MESSAGE	**THIS UNIT**	**HIGHER**	**SUBORDINATE**	**OTHER**
FSCMS	LIST A	LIST C		LIST A
BOUNDRY LINES	LIST A	LIST C	LIST C	
SITUATIONAL GRAPHICS	LIST A	LIST C	LIST C	
BATTLE AREAS	LIST A	LIST C		LIST A
NBC GRAPHICS	LIST A	LIST C	LIST A	LIST A
SENSOR ZONES			LIST C	LIST A
MOVEMENT GRAPHICS	LIST E			
FASCM AREA		LIST C	LIST A	LIST A
TAI	LIST E			
FLOT	LIST A	LIST C	LIST E	
ZOR	LIST A	LIST C	LIST C	LIST A
PAH TAH		LIST C	HIGHER	
BASIC UNIT	LIST A	LIST C	LIST C	LIST D
GEN UNIT	LIST A	LIST C	LIST C	LIST D
EQUIPMENT SUMMARY	LIST B			
WEAPONS SUMMARY	LIST B		LIST C	
WEAPONS DETAILED	LIST B		LIST C	
AMMO SUMMARY	LIST B		LIST C	SUBORDINATES
AMMO DETAILED	LIST B		LIST C	SUBORDINATES
FUEL INFO	LIST B			
ENEMY UNIT	LIST A			
LIST A	DIV FSCC, DS BN FDC, BN FSCC, REGT FWD			
LIST B	REGT FWD, DIV FSCC			
LIST C	BN FSCC, DS BN FDC, REGT FWD			
HIGHER	DIV FSCC			
LIST D	DIV FSCC, DS BN FDC			

Table 6-2, REGIMENTAL FSCC DATA DISTRIBUTION

MESSAGE	THIS UNIT	HIGHER	SUBORDINATE	OTHER
LIST E	DIV FSCC, DS BN FDC, REGT FWD			
LIST F	DS BN FDC, BN FSCC, REGT FWD			
SUBORDINATES	BN FSCCs			

(1) **LISTS.** The regimental FSCC creates six lists.

(2) **CRITERIA**. All data is transmitted using criterion ANY CHANGE.

C. **DIVISION FSCC**.

Table 6-3, DIVISION FSCC DATA DISTRIBUTION

MESSAGE	THIS UNIT	HIGHER	SUBORDINATE	OTHER
FSCMS	LIST A	LIST B	LIST A	LIST A
BOUNDRY LINES	LIST A	LIST B	LIST A	
SITUATIONAL GRAPHICS	LIST A	LIST B	LIST A	LIST A
BATTLE AREAS	LIST A	LIST B		LIST A
NBC GRAPHICS	LIST A	LIST B	LIST A	LIST A
SENSOR ZONES			HIGHER	LIST A
MOVEMENT GRAPHICS	LIST A	LIST B	LIST A	
FASCAM AREAS		LIST B	LIST A	
TAI	LIST A	LIST B		
FLOT	LIST A	LIST B	LIST A	
ZOR	LIST A	LIST B	LIST A	LIST A
PAH TAH		LIST B	LIST A	LIST A
BASIC UNIT	LIST A	LIST B	LIST A	LIST A
GEN UNIT	LIST A	LIST B	LIST A	LIST A
EQUIPMENT SUMMARY	LIST A			
WEAPONS SUMMARY			LIST A	
WEAPONS DETAILED				
AMMO SUMMARY			LIST A	
AMMO DETAILED				
FUEL INFO	LIST A			
ENEMY UNIT	LIST A			
LIST A	REGT FSCC, REGT FDC, DIV FWD, MEF FSCC, DASC			
LIST B	REGT FSCC, REGT FDC, DIV FWD			

(1) **LISTS.** The division FSCC creates two lists.

(2) **CRITERIA.** All data is transmitted using criterion ANY CHANGE.

D. **MAGTF FFCC.**

Table 6-4, MEF FSCC DATA DISTRIBUTION

MESSAGE	THIS UNIT	HIGHER	SUBORDINATE	OTHER
FSCMS	LIST A			LIST A
BOUNDRY LINES	LIST A			
SITUATIONAL GRAPHICS	LIST A			
BATTLE AREAS	LIST A			LIST A
NBC GRAPHICS	LIST A			LIST A
SENSOR ZONES				LIST A
MOVEMENT GRAPHICS	LIST A			LIST A
FASCAM AREA	LIST A			LIST A
TAI				
FLOT	LIST A			LIST A
ZOR	LIST A			LIST A
PAH TAH	LIST A			LIST A
BASIC UNIT	LIST A			LIST A
GEN UNIT	LIST A			LIST A
EQUIPMENT	LIST A			
SUMMARY				
WEAPONS SUMMARY				
WEAPONS DETAILED				
AMMO SUMMARY				
AMMO DETAILED				
FUEL INFO				
ENEMY UNIT				

LIST A DIV FSCC, MEF FWD, SACC

(1) **LISTS.** The MAGTF FSCC creates one list as described in table 6-4.

(2) **CRITERIA.** All data is transmitted using criterion ANY CHANGE.

E. **REGIMENTAL FDC.**

Table 6-5, REGIMENTAL FDC DATA DISTRIBUTION

MESSAGE	THIS UNIT	HIGHER	SUBORDINATE	OTHER
FSCMS		LIST B	LIST A	LIST D
BOUNDRY LINES		LIST B	LIST D	
SITUATIONAL GRAPHICS		LIST B		
BATTLE AREAS		LIST B		LIST B
NBC GRAPHICS	LIST A	LIST B	LIST A	LIST D
SENSOR ZONES			LIST A	
MOVEMENT GRAPHICS	LIST A	LIST B	LIST C	
FASCAM AREA	LIST A		LIST A	
TAI		LIST B		
FLOT		LIST B		LIST D
ZOR		LIST B		LIST D
PAH TAH	LIST A		LIST A	
BASIC UNIT	LIST A	LIST B	LIST A	LIST C
GEN UNIT	LIST A	LIST B	LIST A	LIST C
EQUIPMENT SUMMARY	LIST A		LIST C	
WEAPONS SUMMARY				LIST C
WEAPONS DETAILED			LIST A	LIST C
AMMO SUMMARY				LIST C
AMMO DETAILED			LIST A	LIST C
FUEL INFOEQUIP	LIST A		LIST C	
ENEMY UNIT	LIST A	LIST B	LIST C	LIST A

LIST A	DIV FSCC, BN FDCs, REGT FWD, TPC
LIST B	BN FDCs, REGT FWD, TPC
LIST C	DIV FSCC, REGT FWD, TPC
LIST D	BN FDC

(1) **LISTS.** The REGIMENTAL FDC creates four lists as described as in table 6-5.

(2) **CRITERIA.** All data is transmitted using criterion ANY CHANGE.

F. **BATTALION FDC.**

Table 6-6, DS BATTALION FDC DATA DISTRIBUTION

MESSAGE	THIS UNIT	HIGHER	SUBORDINATE	OTHER
FSCMS		LIST C		LIST C
BOUNDRY LINES		LIST C		LIST C
SITUATION GRAPHICS		LIST C		LIST C
BATTLE AREAS		LIST C		
NBC GRAPHICS	LIST B	LIST C	LIST D	LIST C
SENSOR ZONES		LIST F	LIST E	
MOVEMENT GRAPHICS	LIST B	LIST F		
FASCAM AREA	LIST B	LIST C	LIST B	LIST C
TAI		LIST F		LIST F
FLOT		LIST C		LIST C
ZOR		LIST C		LIST C
PAH TAH		LIST F		LIST F
BASIC UNIT	LIST D	LIST C	LIST D	LIST C
GEN UNIT	LIST D	LIST F	LIST D	LIST C
EQUIPMENT SUMMARY	LIST E		LIST E	
WEAPONS SUMMARY	LIST A		LIST G	
WEAPONS DETAILED	LIST E		LIST G	
AMMO SUMMARY	LIST A		LIST G	
AMMO DETAILED	LIST E		LIST G	
FUEL INFO	LIST E		LIST E	
ENEMY UNIT	LIST B	LIST F	LIST G	

LIST A	Supported Regt FSCC
LIST B	REGT FSCC, BN FWD, R BN, GSR BN
LIST C	BTRY FDCs, BN FWD, R BN, GSR BN
LIST D	REGT FDC, REGT FSCC, BN FWD, R BN, GSR BN
LIST E	REGT FDC, BN FWD, R BN, GSR BN
LIST F	BN FWD, R BN, GSR BN
LIST G	REGT FSCC, BN FWD, REGT FDC

(1) **LISTS.** The BATTALION FDC creates seven lists as described as in table 6-6.

(2) **CRITERIA.** All data is transmitted using criterion ANY CHANGE.

G. **BATTERY FDC.**

Table 6-7, BATTERY FDC DATA DISTRIBUTION

MESSAGE	THIS UNIT	HIGHER	SUBORDINATE	OTHER
FSCMS				
BOUNDRY LINES				
SITUATION GRAPHICS				
BATTLE AREAS				
NBC GRAPHICS		HIGHER		
SENSOR ZONES				
MOVEMENT GRAPHICS		HIGHER		
FASCAM AREA		HIGHER		
TAI				
FLOT				SUBORDINATES
ZOR				SUBORDINATES
PAH TAH				
BASIC UNIT		HIGHER		
GEN UNIT		HIGHER		
EQUIPMENT SUMMARY		HIGHER		
WEAPONS SUMMARY				
WEAPONS DETAILED		HIGHER		
AMMO SUMMARY				
AMMO DETAILED		HIGHER		
FUEL INFO		HIGHER		
ENEMY UNIT		HIGHER		
DEFAULT LIST: HIGHER	BN FDC			
DEFAULT LIST: SUBORDINATES	BCS			

(1) **LISTS.** The BATTERY FDC uses HIGHER and SUBORDINATES, two of their default lists as described as table 6-7.

(2) **CRITERIA.** All data is transmitted using criterion ANY CHANGE.

H. **TPC.**

Table 6-8, TPC DATA DISTRIBUTION

MESSAGE	THIS UNIT	HIGHER	SUBORDINATE	OTHER
FSCMS BOUNDRY LINES	LIST A			
SITUATION GRAPHICS BATTLE AREAS NBC GRAPHICS				
SENSOR ZONES MOVEMENT GRAPHICS FASCAM AREAS TAI FLOT ZOR PAH TAH	LIST A			
BASIC UNIT	LIST A		LIST A	
GEN UNIT	LIST A		LIST A	
EQUIPMENT SUMMARY WEAPONS SUMMARY WEAPONS DETAILED AMMO SUMMARY WEAPONS DETAILED	LIST A			
FEL INFO ENEMY UNIT INFO	LIST A			
LIST A	REGT FDC, TPC FWD			

H.

(1) **LISTS.** The TPC creates one list as described as in table 6-4.

(2) **CRITERIA.** All data is transmitted using criterion ANY CHANGE.

1. **THE DISTRIBUTION FUNCTION.** Data distribution is governed by the following rules.

A. **GUIDANCES** are not automatically distributed. This information is transmitted manually from the particular guidance window.

B. **MET DATA** is not distributed via data distribution. Instead meteorological messages are transmitted to stations based on the MET UNIT ID field in the general unit info window.

C. **THIS UNIT DATA**, data changed at an opfac, is not distributed automatically. Geometry and unit data entered at that opfac is manually transmitted by the operator. The destination is the appropriate distribution

list.

1. **METEOROLOGICAL DATA DISTRIBUTION.**

A. **General.** Meteorological messages, as mentioned above, are not automatically transmitted by the distribution process. Instead, these messages are disseminated by the use of the MET UNIT ID field found in a unit's general information window. When met data is received at a given station, unseen to the operator, the met message indicates the original source of the met. The receiving station searches its current situation unit file examining each stored unit's MET UNIT ID field. If the MET UNIT ID is the same as that from which the message was received the OPFAC will transmit the met to those units. In other words, the receiver of a met relays that met to all stations in his data base that have the MET UNIT ID the same as the original source of the met.

B. When unit data is received via data distribution the MET UNIT ID is blank. This field must be entered by the receiving station if that OPFAC has a need to distribute the met to the stored unit.

C. **MET DISTRIBUTION SETUP.** Met messages are transmitted between artillery units. This can be accomplished in one of two ways.

(1) **MET STATIONS** held at the regimental level. If all met sections are controlled and positioned by the regimental FDC these stations transmit their data to the regimental TPC via the MET/RADAR net. The TPC, at the direction of the MET officer, esatablishes routing to the battalion FDCs. This routing is based on time-space validity concerns that govern the positioning of the met stations and the timing of met delivery as well as the missions of the artillery battalions. TPC disseminates met from specific met stations to the DS and GS artillery battalion FDCs. The reinforced battalion transmits the met to the reinforcing battalion.

(a) EXAMPLE: 10TH Marines has two met stations established. MET 01 is positioned to support 1/10, a DS battalion. MET 02 is positioned to support 5/10, a GS unit. The TPC enters the general unit data for each battalion and assigns the MET UNIT ID for the correct supporting MET section.

(b) When the met message is transmitted to the TPC it is automatically relayed to the battalion FDCs based on the entry in the MET UNIT ID for that battalion as it is stored at the TPC.

(c) At the battalion FDCs the MET UNIT ID for each subordinate battery and for the reinforcing battalion FDC is entered with the name of the met station that supports the battalion. This causes the met to be transmitted to the battery FDCs.

(2) **MET STATIONS** attached to battalions. If met stations are attached to battalion FDCs, then the battalion FDC receives the met message and disseminates this to the battery FDCs as described above.

1. **RECEIVED MESSAGE SETUP**.

A. **General.** By default, AFATDS processes all messages received, taking action on each message automatically. This processing can be changed if required to any of the following:

(1) **ROUTE** causes the computer to relay the received messages of the type specified to selected stations without processing the message.

(2) **ROUTE AND PROCESS** causes the computer to take action on the received message as well as relay the message to the specified destinations (currently this function is not enabled).

(3) **DEFER** causes the computer to place the received message in the deferred message log where it is stored until the operator elects to process the message.

Table 6-9 describes changes to the default received message setup used during division level operations.

NOTE: Although it is possible to set up ATI messages to route that function is not working, in this version of software, therefore the procedures for routing ATI messages have been removed.

Table 6-9, Changes to Received Message Setup for Division Operations

STATION	MESSAGE	SETUP
FU	TARGET INDICATOR	Route to TPC.
GSR, R AND DS BN	TARGET INDICATOR	Route to TPC.
GS BN FDC	TARGET INDICATOR	Route to TPC.
REGT FDC	TGT INDICATOR	Route to TPC.
BN FSCC	TARGET INDICATOR	Route to TPC.
REGT FSCC	TARGET INDICATOR	Route to TPC.
DIV FSCC	TARGET INDICATOR	Route to TPC.

B. Table 6-10 provides changes to the defualt received message setup used in MEF forward level operations.

Table 6-10, Changes to Received Message Setup for MEF FWD Operations

STATION	MESSAGE	SETUP
FU	TARGET INDICATOR	Bn. FDC.
GSR, R AND DS BN	TARGET INDICATOR	Bn. FDC.
GS BN FDC	TARGET INDICATOR	Bn. FDC.
BN FDC	TARGET INDICATOR	Bn. FDC.

CHAPTER SEVEN

FIRE SUPPORT TARGETING

1. **GENERAL**. Target information is maintained at AFATDS to provide a data base of information that can be used for three purposes.

A. Target information that is sufficiently identified and meets the

commander's criteria is used to engage targets in the current situation.

B. Target intelligence that is not sufficiently developed to yield targets is stored and evaluated against existing and incoming target information to produce targets.

C. Targets that do not merit engagement are stored as potential fire plan targets.

1. **CAPABILITIES.** System capabilities with regard to targets are limited since AFATDS is a fire support and not an intelligence system. AFATDS currently allows:

A. The reception of target information in the form of artillery target intelligence (ATI) and fire request messages (FR).

B. The transmission of fire orders and orders to fire to other AFATDS and TACFIRE devices. This function facilitates fire mission processing rather than actual targeting.

C. The comparison of FR and ATI messages to guidance to determine how the target should be processed in the current situation.

D. The transmission of ATI messages composed at the AFATDS. These messages are transmitted only to US Army All Source Analysis System (ASAS) and Maneuver Control System (MCS). Attempting to transmit these messages automatically stores the target intelligence in the PLANNED target list.

E. The correlation of undeveloped target information to generate targets. This processing is referred to as suspect target processing.

F. The correlation and development of targetable data from the intersection of three target indicators of similar or same type. Target indicators are any directional target data such as shell reports and flash-to-bang reports.

G. The correlation of target indicator data with any existing target of the same type that plots along the ray from the target.

1. **TARGET LISTS**

A. **General:** AFATDS creates five target lists and a target indicator list in the current situation for the storage of target data. No additional lists can be built by the operator in the current situation. Planned situations, however, allow the operator to construct additional target lists.

(1) CURRENT SITUATION TARGET LISTS

(a) ACTIVE TARGET LIST. The active target list contains only those targets that are currently being processed as fire missions. These targets are automatically removed from the list when the missions are ended. The operator should under no circumstance add targets to this list by means other than normal fire mission processing nor should this list be used for fire plan targeting.

(b) INACTIVE TARGET LIST. Targets are entered into the inactive target list in two ways. Targets that were processed as fire missions and have been ended, ATI reports or CFFs that passed target selection standards, are not entered into the TMM with a precedence of planned and are high payoff targets.

(c) PLANNED TARGET LIST. The planned target list receives those ATI generated targets that pass TSS, and are listed in the target management matrix with a precedence of planned, and all ATI messages that are attempted to be transmitted.

(d) ONCALL TARGET LIST. The oncall target list receives all targets that are recorded at the end of fire missions or transmitted from another OPFAC as an oncall target.

(e) SUSPECT TARGET LIST. The suspect target list stores targets that fail target selection standards and acts as a pool of target information that may be combined to produce targetable information. This processing can be turned on or off by the operator.

(f) TARGET INDICATOR LIST. The target indicator list contains shell reports and other directional target information. If target indicator processing is turned on and three intersecting rays for similar target indicators produce a suspect target. That target is then processed and those target indicators are deleated.

(g) Figure 7-1 graphically depicts the interaction of incoming messages and guidance that determines the current situation list in which a target is placed.

B. PLANNED SITUATION TARGET LISTS

(1) MASTER TARGET LIST. The master target list is created automatically when targets are added to a planned situation. This list is automatically updated with each new target as well as the contents of new target lists added to the plan.

(2) OPERATOR CREATED LISTS. The AFATDS operator can add target lists by creating and naming these in a planned situation. The targets added to these lists are also automatically stored in the master target list of the plan.

1. **RESPONSIBILITY**

A. MAGTF FFCC. The MAGTF FFCC stores all target data received in the current plan and creates any additional lists required in planned situations.

B. DIVISION FSCC. The division FSCC stores all target data received in the current plan. All target indicators are routed to the TPC for processing. The division FSCC also creates any additional lists required in planned situations.

C. REGIMENTAL FSCC. The regimental FSCC stores all target data received in the current plan. All target indicators are routed to the TPC for processing. The regimental FSCC also creates any additional lists required in planned situations.

D. BATTALION FSCC. The battalion FSCC routes all target data received in the current plan to the regimental FSCC. All target indicators are routed to the TPC for processing. The regimental FSCC also creates any additional lists required in planned situations.

E. ARTILLERY TPC. The TPC is responsible for counterfire processing. The artillery TPC stores all target data received in the current plan. All target indicators are routed to the TPC. The TPC also creates any additional lists required in planned situations.

1. **TARGET INFORMATION DISSEMINATION IN THE CURRENT PLAN**

A. PURPOSE. The purpose of target dissemination is to ensure that targetable information is provided to those stations that require it or whose operations could be affected by it. All target indicators are routed to the artillery TPC (see tables 7-1 and 7-2).

B.BOTTOM UP FLOW. Target information can be generated at any station that possesses a TACFIRE or AFATDS device. This information must transmitted to other stations via a target list.

(1) Table 7-1 and figure 7-2 describe the flow of target information in a division level operation.

	Table 7-1, Bottom-up Target Information Flow in a DIVISION LEVEL OPERATION	
STEP	STATION	ACTION

	Table 7-1, Bottom-up Target Information Flow in a DIVISION LEVEL OPERATION	
STEP	STATION	ACTION
1	FO	FO transmits ATI GRID, POLAR or SHELLREP message from the DMS to his supported battalion FSCC.
2	BN FSCC	BN FSCC enter all ATI MESSAGES into a list of targets in plan TARGETS and transmit them to the Regimental FSCC. Target indicators are routed to the TPC, due to the CONFIGURE RECEIVED MESSAGE SETUP alterations.
3	REGT FSCC	REGT FSCC consolidates and deconflicts all target lists received. The TGT INDICATOR information is automatically routed to the TPC due to the CONFIGURE RECEIVED MESSAGE SETUP alterations. A target bulletin is transmitted to the battalion FSCCs.
4	FU FDC	The fire unit composes and transmits the ATI;CDR, ATI;AZR or ATI;SHR from the BCS/FDS to the FU AFATDS. The AFATDS routes these messages as ATI MESSAGE (ATI;CDR, ATI;AZR) and TGT INDICATOR (ATI;SHR) to the BN FDC and TPC respectively, due to the CONFIGURE RECEIVED MESSAGE SETUP alterations.
5	DS BN FDC	DS BN FDC builds all ATI MESSAGES into a list of targets in plan TARGETS and transmits to the REGT FSCC.
6	DS BN FDC	DS BN FDC routes TGT INDICATORS to the TPC due to the CONFIGURE RECEIVED MESSAGE SETUP.
7	GSR and R FDC	GSR and R FDC builds all ATI MESSAGES into a list of targets in plan TARGETS and transmits to the supported FSCC. Target indicators are routed to the TPC, due to the CONFIGURE RECEIVED MESSAGE SETUP.
8	GS FDC	GS FDC builds all ATI MESSAGES into a list of targets in plan TARGETS and transmits to the supported FSCC. Target indicators are routed to the TPC, due to the CONFIGURE RECEIVED MESSAGE SETUP.
9	DIV FSCC	DIV FSCC routes TGT INDICATORS to the REGT FDC due to the CONFIGURE RECEIVED MESSAGE SETUP and deconflicts target lists.
10	REGT FDC	REGT FDC routes TGT INDICATORS to the TPC due to the CONFIGURE RECEIVED MESSAGE SETUP.
11	REGT FDC	REGT FDC builds ATI MESSAGES into a list of targets inplan TARGETS and transmits to the DIV FSCC.

(2) Table 7-2 and figure 7-3 describes the flow of target information in a MEF forward level operation.

	Table 7-2, Bottom-up Target Information Flow in a MEF FORWARD LEVEL OPERATION	
STEP	STATION	ACTION
1	FO	FO transmits ATI GRID, POLAR or SHELLREP message from the DMS to his supported battalion FSCC.
2	BN FSCC	BN FSCC enters all ATI MESSAGE in a target list in plan TARGETS and tansmits to the regiment FSCC.

	Table 7-2, Bottom-up Target Information Flow in a MEF FORWARD LEVEL OPERATION	
STEP	STATION	ACTION
3	BN FSCC	BN FSCC automatically routes TGT INDICATOR (ATI SHELLREP) to the DS BN FDC due to the CONFIGURE RECEIVED MESSAGE SETUP alterations.
4	REGT FSCC	REGT FSCC consolidates and deconflicts all target lists. The TGT INDICATOR information is automatically routed to the DS BN FDC due to the CONFIGURE RECEIVED MESSAGE SETUP alterations. A target bulletin is dessiminated to subordinates.
5	FU FDC	The fire unit composes and transmits the ATI;CDR, ATI;AZR or ATI;SHR from the BCS/FDS to the FU AFATDS. The AFATDS enters these messages in a list of targets in plan TARGETS and transmits to the supported FSCC. Target indicators are routed to the TPC.
6	GS, GSR and R FDC	GSR and R FDC enter all ATI MESSAGES in a list of targets in plan TARGETS and transmit to the supported FSCC. Target indicators are routed to the TPC, due to the CONFIGURE RECEIVED MESSAGE SETUP.

1. **TARGET INFORMATION RETRIEVAL**

A.There are no target retrieval mechanisms that allow an AFATDS OPFAC to search the data base of another AFATDS. As such, it is necessary for each FSCC that builds a fire plan to contact higher and adjacent units to request the transfer of their target file. The higher and adjacent units then transmit both their planned and on-call target lists from the current situation or any planned target list that may be requested.

B.Targeting for a future plan is discussed further in chapter 8.

CHAPTER EIGHT

FIRE SUPPORT AND FIRE PLANNIN G

1. General. Fire support planning allows the GCE commander to plan for future operations. Future operations are those operations in which the friendly and enemy situations change sufficiently to prevent the use of the current situation data for predicting operations. Fire planning is the targeting of enemy forces and the scheduling of these targets to support the GCE commander's intent. There are two general situations that alter the method of fire planning that occur using the AFATDS computer. These are defined based on the time that will exist until the plan is executed.

A. **Current situation planning** is accomplished at echelons where the

focus is on the current battle. Plans are prepared based on the current situation assuming that little will change between the preparation of the plan and its execution. These plans are the simplest to prepare and execute.

B. **Future situation planning** is performed when there is a need to focus on tactical situations that differ from the current battle. Using this type of planning, AFATDS supports the entire staff planning process and the decide-detect-deliver-assess (D3I) targeting methodology.

1. Responsibility . Each OPFAC is responsible for some part of fire support and fire planning.

A. **Prior to establishment of the landing force ashore.** Prior to establishment of the landing force ashore, the MAGTF FFCC (SACC) builds all future plans in accordance with the CATF and CLF intent, orders and verbal direction. All plans created are transmitted to the LFOC (regimental FSCC-AFLOAT) and subordinate battalion FSCCs and fire support assets controlled by the MAGTF FFCC.

B. **After establishment of the landing force ashore.** After establishment of the landing force ashore, the GCE FSCC plans for future operations. The regimental FSCC may also conduct targeting and fire planning in the future plan.

C. **Planning at battalion FSCCs.** Fire planning at the battalion FSCC is always conducted in the current situation due the lack of assets for determining the future situation and the battalion's focus on the immediate battle.

D. **Planning at the battalion FDC.** The battalion FDC receives the FS plan from the regimental FSCC. Unit movements are added to support the plan and then submitted to the regimental FSCC for approval. FS plans are then disseminated to the battery FDCs.

E. **Implementation of fire plans.** Fire plans are implemented at the direction of the maneuver commander that the plan supports.

1. TARGET LISTS .

A. **Current fire planning** is conducted by entering targets into the planned target list using the MESSAGES selection under FIRE MISSIONS. These targets can be augmented by adding the contents of the other lists in the current situation. These are the ACTIVE, INACTIVE, ONCALL and SUSPECT target lists.

B. **Future fire planning** automatically creates a MASTER PLANNED TARGET LIST for the new plan. This list is automatically updated with all targets that are added to the plan including the contents of target lists received and those added by the operator for the plan. Additional lists can be added to the plan. It is recommended that the maneuver element responsible for the plan create a separate named list for each plan. This list allows the responsible FSCC to control the targets added to the list as opposed to accepting the master list that is automatically updated.

1. Current fire planning sequence. Current fire planning is accomplished using the sequence of events described in table 8-1 below.

Table 8-1. The Current Fire Planning Sequence			
STAFF ACTION	AGENCY	AFATDS ACTION	REMARKS
1. Receive the maneuver course of action.	Fire support planner at FSCC/FFCC.		The fire plan will be executed within a short period of time and therefore will be constructed as a schedule of fire in the current situation. No additional steps are required at the AFATDS computer at this point.
2 Begin targeting for the plan.		Create the initial target list.	The fire plan target list can be created by: -targeting the enemy units in current situation -adding the contents of other plans' lists -adding individual targets from current target lists to the on-call target list
2a.		Create the Fire Plan Target List	Add all desired targets from the Current On-Call target list to the Fire Plan, by Clicking 1 on TARGETS, FIRE PLANS, NEW and NAME the Fire Plan. Transfer targets from the On-Call List and Click 1 on OK.
NOTE: All targets are stored in the oncall target list, due to the fact targets cannot be added to the planned target list. Additional named lists cannot be created in the current situation.			
2b		Disseminate the list.	Transmit a freetext warning order followed by the Fire Plan target list. The list is transmitted by clicking 1 on TARGETS, FIRE PLANS, EDIT and select the Fire Plan. Click 1 on SEND and select the destination. OK the select UNIT window to transmit the list.
NOTE: A received target list does not produce an alert. Instead the list is stored under the Fire Plan Name and in the Current On-Call Target List. The list is accessible in the current situation by displaying the Fire Plan List or the Current On-Call Target List.			
3. Refine the target list.	Subordinate maneuver units.	Compose their additions to the target list as additions to the fire plan target list.	Subordinates add targets using the MISSION PROCESSING, MESSAGES option.
3a	Subordinate maneuver units.	Transmit their recommended lists to the fire support planner.	A freetext warning order is followed by transmitting the planned target list to the fire support planner.
3b	Fire support planner.	Resolve duplications and delete targets.	The fire support planner receives the lists of targets from subordinates and adds those targets deemed necessary to the oncall target list. Duplications are resolved in the ONCALL TARGET LIST window. Click 1 on SORT, CHECK FOR DUPLICATES. Delete all duplicates found.

4	Fire support planner.	Create schedules of fire to support the Current Situation.	Click 1 on TARGETS. Select GROUPS or SERIES to create either. Select FIRE PLANS to build a plan and schedule groups, series or individual targets in a plan.
5		Compute schedules of fire.	Click 1 on PLANNING, TARGETS, FIRE PLAN and select each FP in turn. Click 1 on OPTIONS, SCHEDULE, OPTIONS, CALCULATE. Resolve all unscheduled targets.
6		Coordinate fires on fire plan target.	Click 1 on TARGETS, PLANNED TARGET LIST. Select LIST, CHECK FOR COORDINATION. Those targets that can not be cleared must be deleted from the SOF.
7		Transmit the schedule to fire support agencies.	Transmit a freetext message warning that SOF will be transmitted, Click 1 on SEND and select the fire support unit IDs. Click 1 on OK.
8		Send the SOF to non-digitized units.	Send SOF via voice net.
9 Disseminate the SOF	Arty support unit HQ.	Warn subordinates that the fire plan is to be transmitted.	Send a free text message to all battalion or battery FDCs warning of the transmission of the SOF.
10		Transmit the SOF to AFATDS equipped fire units.	Click 1 on TARGETS, SOF, SEND and select the fire support unit IDs. Click 1 on OK.
10a		Transmit NNFP;CFF/NNFP;TARGET messages to non-AFATDS BCS and FDS units	Click 1 on TARGETS, FIRE PLANS, Select Fire Plan, EDIT, EXECUTE, Select OK. Then select TARGETS, SOF, Select the SOF Name, EDIT, Highlight the Unit you are sending to, Select OPTIONS, SEND TO SELECTED, Select the BCS, and OK. All data for that firing unit is transmitted. **DENY ALL MISSIONS IN THE IP WINDOW GENERATED BY** EXECUTING THE SOF.
10b	Fire units	Receive SOF.	At BCS units the SOF is received as NNFP;CFFs that are stored by selecting FIRE PLAN GROUP ENTRY from the BCS main index. At FDS units each received NNFP;TARGET message is stored.
11. Execute the SOF.	Fire support planner.	Announce trigger for plan.	The fire support planner transmits the fire plan H-HOUR via free text message.

1. Future fire planning sequence . The future fire planning sequence supports the staff planning process with a parallel sequence of processing and decision support tools. Table 8-2 describes this process.

Table 8-2. The Future Fire Planning Sequence

STAFF ACTION	AGENCY	AFATDS ACTION	REMARKS
1. Receive the maneuver course of action.	Fire support planner at FSCC/FFCC.	Create planned situation.	Click 1 on SITUATIONS, NEW PLAN. This window allows the operator to copy data from any other situation or specify what aspects of guidance and data base will be built unique to the planned situation.
1a		Open the planned situation.	Click 1 on SITUATIONS, OPEN PLAN, the plan name and OK. Display the map by clicking 1 on MAP, DISPLAY MAP.
1b		Create friendly situation	Click 1 on PLANNING, SITUATION, FRIENDLY. Enter your subordinate UNIT IDs that possess ZORs. Select the UNIT ID of the main effort.
1c		Create enemy situation	Click 1 on PLANNING, SITUATION, ENEMY. Select the enemy force size and their activity. (add enemy template)
1d		Add or alter unit data.	Click 1 on UNITS, NEW to build new units in the planned situation. Click 1 on UNITS, EDIT to alter existing planned units or copy units from the current or any other situation. (add individual enemy units)
1e		Add or alter geometry data.	Click 1 on GEOMETRY, NEW to build new data in the situation. Click 1 on GEOMETRY, EDIT to alter existing situation data or copy geometry from the current or any other situation.
1f		Add or alter guidance.	Click 1 on GUIDANCES and select any category to add or edit existing guidance.
2. Wargame fire support task organizations.	Fire support planner.	Create the FS COA task organization.	Click 1 on PLANNING, FS ESTIMATE. The displayed window shows a column for each unit assigned a sector in step 1b. Each column is labeled with tactical missions. Assign fire support units from the selection list to the correct supported unit or to support the entire force. These assignments determine fire support capability for the COA.
2a		Compute statistics for the COA.	Click 1 on OPTIONS, COMPUTE STATISTICS. ROUNDS REQUIRED, TUBES IN SECTOR, MASSING CAPABILITY, SYSTEM UTILIZATION, SIMPLICITY and TASKS SUPPORTABLE are computed.
2b		Create additional COAs.	Click 1 on PLANNING, COA, and click 1 on the button corresponding to the next COA. Complete steps 2 and 2a for each new COA. Up to 3 COAs can be created.
2c		Compare COAs.	From any COA's TASK ORGANIZATION window, click 1 on OPTIONS, COMPARE COAs.

3. Select the Task organization for fire support	Fire Support planner.	Select a COA.	Click 1 on PLANNING, COA, click 1 on the button corresponding to the desired COA then click 1 on SELECT COA.
3a		Create additional phases.	Click 1 on SITUATIONS, OPEN PLAN, highlight the planned situation name and click 1 on NEW PHASE. Enter the second phase in the same manner as the first.
3b Begin targeting for the Fire Plans.		Create the Fire Plan Target List	Select TARGETS, TARGET LISTS, NEW, name the FP Target List. The FP Target list is now created and ready for targets.
3c.		Add targets to the FP target list.	The fire plan target list can be created by: -targeting the enemy units in planned situation -adding the contents of other fireplans lists -adding individual targets from current target lists to the FP target list
NOTE: All targets are stored in the fire plan and phase master list. These are copied into a plan list created by the operator to avoid complications associated with the fact that any new target or list is copied to the master list automatically.			
3d		Disseminate the list.	Transmit a freetext warning order followed by the Fire Plan target list. The list is transmitted by clicking 1 on TARGETS, TARGET LISTS, EDIT and select the target list. Click 1 on SEND and select the destination. OK the select UNIT window to transmit the list.
NOTE: A received target list does not produce an alert. Instead the list is stored under the received name. In a planned situation the named list can be accessed directly.			
4. Refine the target list.	Subordinate maneuver units.	Compose their additions to the target list as separate lists.	Subordinates produce lists of targets for inclusion.
4a	Subordinate maneuver units.	Transmit their recommended lists to the fire support planner.	A freetext warning order is followed by transmitting the lists of targets to the fire support planner.

4b	Fire support planner.	Resolve duplications and delete targets.	The fire support planner receives the lists of targets and adds those targets deemed necessary to the target list (click 1 on TARGETS, TARGET LISTS and the plan target list). On the TARGET LIST window click 1 on SORT, CHECK FOR DUPLICATES.
4c	Fire support planner.	Create schedules of fire to support the planned situation.	Click 1 on TARGETS. Select GROUPS or SERIES to create either. Select FIRE PLANS to build a fire plan and schedule groups, series or individual targets in a fire plan.
5. Write the op order.		Create the op order or FS annex.	Click 1 on TEXT, INDEX, (text type), OPTION, EDIT. ***Note:*** unit data for the creating OPFAC of the planned situatuion will assume the format of the unit's service **(USMC format vice USA, the entry is important do not let the service default.).**
5a		Create the FS execution matrix	Click 1 on PLANNING, TEXT, FS EXECUTION MATRIX. Matrix displays the units with sectors assigned on the SITUATIONS, FRIENDLY window and columns of phases based on the number of phases created. The cross indexed boxes are free text areas of up to seven lines.
6 Dissemi nate the plan.	Fire support planner.	Transmit the planned situation to subordinate and supporting units.	Click 1 on SITUATIONS, TRANSFER PLAN. Click 1 on COMM to transmit the planned situation or on ARCHIVE to save the planned situation as an OD export file. If COMM is selected those portions of the situation to be sent must be selected. ARCHIVE saves the entire planned situation.
6b		Print complete operations order for non-digital support units.	Click 1 on PLANNING, TEXT, INDEX and select OPERATIONS ORDER, FS ANNEX and/or FA ANNEX. Click 1 on PRINT, select the print and click OK.
6c Write arty fire support documen ts.	FA support HQ unit.	Prepare the FA estimate.	Click 1 on PLANNING, FA ESTIMATE. Select the caliber and units for the estimate. Click 1 on OK. Provides the number of master target list targets that fall in sensor sectors (ACQUIRABLE), those in fire unit fans (ATTACKABLE) and those that are both with the required ammunition expenditure to engage.
6d		Prepare the FA annex.	Click 1 on PLANNING, TEXT, FA SUPPORT MATRIX. Matrix displays the artillery units in the plan and columns of phases based on the number of phases created. The cross indexed boxes are free text areas of up to seven lines.

6e		Examine unit locations and targets.	FS units' planned locations can moved to accommodate improved attackability and sensors can be re-positioned to improve acquisition.
6f		Recommend changes to sensor and fire unit locations to support the plan.	Recommended changes are submitted by freetext to the fire support planner.
6g	Maneuver unit HQ.	Approve/disap-prove new unit/sensor locations.	Free text approval/denial of new positions is transmitted to the requesting agencies.
6h	FA support unit HQ.	Disseminate FA annex.	Select PLANNING, TEXT, INDEX, highlight the FA annex and transmit to subordinate fire support assets and the fire support planner.
6i		Request ammunition to support the planned situation and it's SOFs	In the current plan, click 1 on UNITS, EDIT THIS UNIT, OPTIONS, AMMO REQUISITION. Complete this form with the required ammunition and print for submission.
6j	All CPs.	Plan and order movement of subordinates.	Plan the movement of units and routes. Produce unit move order and seek approval where required. Transmit the move orders.
7. Implement the planned situation.	All stations.	Establish Clock synchronization.	By voice communication direct the time hack or direct use of satellite time. To sync, click 1 on SYSTEM, ADMINISTRATION, SET TIME. Type the time zone in the LOCAL TIME ZONE field then click 1 on SET TIME ZONE. Type the time in the SYNC TIME field then click 1 on the SYNCHRONIZE button.
7a.	All stations.	Move to locations required at start of the situation.	Each unit reports to its higher HQ when in place. Send in unit updates via data distribution.
7b.	All stations.	Report ready when all subordinate units are in place.	Each HQ reports to commanding and supported HQ when all subordinates are in place.
7c.	Fire support planner.	Direct implementation of the planned situation.	At the appointed time, click 1 on SITUATIONS, IMPLEMENT PLAN. Select all aspects of the plan to be implemented. Click 1 on OK. Implement the new comm configuration if directed.
8. Update target list.	Subordinate maneuver units.	Transmit changes to the list of targets.	Send warning order followed by any new submissions to the target lists.

8a	Fire support planner	Consolidate target list and check for duplicates	The fire support planner receives the lists of targets and adds those targets deemed necessary to the target list (click 1 on TARGETS, TARGET LISTS and the Current On-Call target list). On the TARGET LIST window click 1 on SORT, CHECK FOR DUPLICATES.
8b	Fire support planner.	Alter schedules of fire as required.	Add or remove targets and/or fire units from fire plans.
8c.		Compute schedules of fire.	Click 1 on PLANNING, TARGETS, FIRE PLANS and select each FP in turn. Click 1 on OPTIONS, SCHEDULE, OPTIONS, CALCULATE. Resolve all unscheduled targets.
8d.	Fire support planner.		Click 1 on targets, planned target list. Select list, check for coordination. those targets that cannot be cleared must be deleted from the SOF.
8e.		Transmit the schedule to fire support agencies.	Click 1 on SEND and select the fire support unit IDs. Click 1 on OK.
8f.		Send the SOF to non-digitized units.	Send SOF via voice net.
10 Disseminate the SOF	Arty support unit HQ.	Warn subordinates that the fire plan is to be transmitted.	Send a free text message to all battalion or battery FDCs warning of the transmission of the SOF.
10b		Transmit the SOF to AFATDS equipped fire units.	Click 1 on TARGETS, SOF, SEND and select the fire support unit IDs. Click 1 on OK.
10c		Transmit NNFP;CFF/NNFP;TARGET messages to non-AFATDS BCS and FDS units	Click 1 on TARGETS, FIRE PLANS, Select Fire Plan, EDIT, EXECUTE, Select OK. Then select TARGETS, SOF, Select the SOF Name, EDIT, Highlight the Unit you are sending to, Select OPTIONS, SEND TO SELECTED, Select the BCS, and OK. All data for that firing unit is transmitted. **DENY ALL MISSIONS IN THE IP WINDOWG ENERATED BY** EXECUTING THE SOF.
10c	Fire units	Receive SOF.	At BCS units the SOF is received as NNFP;CFFs that are stored by selecting FIRE PLAN GROUP ENTRY from the BCS main index. At FDS units each received NNFP;TARGET message is stored.
11. Execute the SOF.	Fire support planner.	Announce trigger for plan.	The fire support planner transmits the fire plan H-HOUR via free text message.

12.	BCS/FDS operator	Receives the H-Hour	The new H-Hour is entered into the fire plan via BCS;COMD. The fire plan is executed at the BCS.

1. Fire plan execution. In either current or future fire plan execution the objective is to cause the targets to be fired based on the time sequence and fire unit selection established in the schedule of fire. A schedule of fire can be executed at any AFATDS station. This method is accomplished by displaying the SOF window (selecting TARGETS, SCHEDULE OF FIRE) and then selecting EXECUTE. AFATDS places all targets that were assigned to the fire plan in the ACTIVE TARGET LIST. This includes all targets that were not scheduled. All targets are compared to the fire units and guidance of the current situation as it exists at the instant of execution. This results in possible new fire unit selection and the potential for targets to be fired at different times and with different munitions than originally predicted. Targets that require coordination are processed for clearance at this time.

2. PLANNED AIR TARGETS . In addition to planning targets in a future plan, AFATDS now has the capability to submit targets to MEF for inclusion in the the Air Tasking Order (ATO). This capability was brought about by the development of the Tactical Air Support Module (TASM). A program, which runs on top of the AFATDS program, and allows an interface with the Contingency Theatre Automated Planning System (CTAPS). CTAPS is the automated system used by air assets for command and control and development of the ATO.

3. PLANNED AIR TARGETING SEQUENCE . Planned air targets are colated from subordinates and submitted to the MEF future ops. section. These targets are for atack 48 to 72 hours out, and after undergoing a targeting board are either submitted to TACC for inclusion in the ATO or are determined unsupportable. Table 8-3 depicts this process.

TABLE 8-3

STAFF ACTION	AGENCY	AFATDS ACTION	REMARKS
1. Determine air targets.	Fire Support planner at FSCC	From the future plan	Determine targets either from the target lists, enemy targets or the enemy template.
2	Fire support planner at FSCC.	Create a planned situation.	Click 1 on SITUATIONS, NEW PLAN. This window allows the operator to copy data from another situation or specify aspects of the database or guidances to be unique. The order to build a plan and the plan name will be dictated by MEF.

2a.		Open the planned situation.	Click 1 on SITUATIONS, OPEN PLAN highlight the plan name and select OK. Display the map by clicking 1 on MAP, DISPLAY MAP.
2b.		Select a course of action.	Click 1 on PLANNING, COA, click 1 on select COA and then the verification windows. (A COA must be selected to allow access to the targeting options.)
3.	Fire support planner at FSCC.	Create an Air Mission List.	Click 1 on TARGETS, TARGET LISTS, NEW AML. Name the AML by your tag name and air day. The default is 48 to 72 hours out.
3a.		Edit air targets.	At a minimum the No Earlier Than (NET) must be entered. This determines into which air day "packet" the target is placed. From the AML highlight each target, select OPTIONS, METHOD OF FIRE AND CONTROL then enter the NET time.
3b.		Add targets to the AML.	Click 1 on TARGETS, TARGET LISTS, EDIT. Highlight the AML and select OK. The AML is in the left hand box and the lists of targets are in the right hand box. Highlight either an entire list or individual targets in that list and select th black arrow moving them into the AML.
4. Determine addition of subordin-ates air targets to AML.	Fire support planner at FSCC.	View subordinates lists of targets in the right hand box of AML window.	Move desired targets from the subordinates lists using the same method as above, into the AML.
5.	Fire support planner at FSCC.	Create Air Support Requests.	In the AML window select CREATE ASRs. the targets in the AML are now assigned ASR numbers from the ASR numbering, block and are moved into the TASM, specifically the Tactical Air Request List (TARL) of the Air Request Manager (ARM).
6.	Fire support planner at FSCC.	Transmit the AML.	The only connection between the ASRs in the TASM and the target information in AFATDS is the AML. Therefore, the AML, which resides inside a plan must be sent prior to the TARL so that the targeting board has all information necessary. Select SITUATIONS, TRANSFER PLAN, highlight the plan and select OK. On the transmit plan window select the COMM radio button, select TARGETS and TARGET LISTS highlight the AML and select SEND, Highlight the destination unit and select OK.

7.	Fire support planner FSCC.	Transmit the ASRs contained in the TARL.	Select the SELECT AIR COMPARTMENT, The TARL is displayed as this is the default. Highlight the ASRs and select transmit. The TARL will be transmitted to the destination unit specified in the air support window.
8. Receive subordinates taret lists.	Fire support planner FFCC.	Colate MEF's and subordinates air targets.	The targets from the subordinates plans are added to MEF's AML to consolidate.
9. Receive subordinates TARLs.	Fire support planner FFCC.	ASRs are automatically added to the MEF's TARL.	ASRs with the same air day are input into the TARL automatically when received.
10. Hold a targeting board.	Fire support planner FFCC.	Delete unsupportable ASRs from the TARL.	Targeting board determines those missions supportable and unsupportable.
11.	Fire support planner FFCC.	Transmit the TARL to the CTAPS.	The TACC is co-located with MEF and the TARL is sent via lan to the CTAPS.
12. Receive the TARL from MEF.	TACC	Input the TARL into the CTAPS.	The TARL is received at the CTAPS as an E-mail envelop and must be re-entered at the CTAPS.
12a.	TACC	Generate the ATOC.	The Air Planning System (APS) is a component of the CTAPS system and generates the ATOC which is the ATO plus commanders intent.
13.	TACC	The ATOC is transmitted to MEF.	
14. Receive the ATOC.	Fire support planner FFCC.	The ATOC is received at MEF.	The Air Coordination Orders (ACOs) are converted at AFATDS into Air Corridors and are disseminated as per data distribution. The entire ATO is received.
15.	Fire support planner FFCC	Transmit the ATO to subordinates.	AFATDS parses the ATO to subordinates using the ASRs in their TARLs as criteria.